DOCUMENT RESUME

ED 214 670 PS 012 771

TITLE Oklahoma Handbook: Child Nutrition Programs. Revised Edition.
INSTITUTION Oklahoma State Dept. of Education, Oklahoma City.
PUB DATE Jan 82
NOTE 313p.

EDRS PRICE MF01/PC13 Plus Postage.
DESCRIPTORS *Ancillary School Services; Breakfast Programs; *Cooks; Equipment; Federal Programs; Food Handling Facilities; *Food Service; *Foods Instruction; Food Standards; Guidelines; *Nutrition; Program Administration; Program Budgeting; Purchasing; Safety; Sanitation
IDENTIFIERS Inventory Control; Menu Planning; *Oklahoma; Recipes (Food); *School Lunch Program

ABSTRACT

Nutrition concepts, school food service guidelines, and related materials (such as nutrition charts, menu planning worksheets, and student survey forms) are provided in this nutrition handbook. Prepared by the Oklahoma State Department of Education's School Lunch Section, the handbook consists of nine sections that are organized in outline format. Section I provides an overview of basic nutrition concepts as well as guidelines and materials for menu planning. A school breakfast program guide is also provided. Section II consists mainly of guidelines for evaluating, adjusting, modifying and using recipes. Conversion tables for weights, liquids, and temperatures are included. Sections III and IV provide guidelines for preparing food and purchasing food in quantity. Section IV also contains consumer reference materials listing United States Department of Agriculture (USDA) standards for meat and poultry products, as well as guidelines for acquiring USDA donated foods and for inventory control. Section V discusses school food service budgeting and cost control. Food storage guidelines are provided in Section VI. Sections VII and VIII discuss sanitation and safety and school food service management and personnel organization. Finally, an illustrated guide for planning and equipping a school food service facility is included in Section IX. (Author/RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED214670

PS

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Oklahoma Handbook

Child Nutrition Programs

State Department of Education
School Lunch Section

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Oklahoma State
Dept. of Education
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS 012771

FOREWORD

When one speaks of the education of the "whole person," he must necessarily speak of the physical, as well as the intellectual, education of the individual. Meals at school offered to all children according to their ability to pay not only alleviate hunger and provide adequately for their nutrition needs but also make it possible for children who have been hungry to have a more positive learning experience and wholesome attitude.

Good food, served in an attractive manner by enthusiastic personnel who do an outstanding job of providing a learning environment, helps build good school morale and provides educational opportunities for all pupils. A well-planned food service program provides an experience which improves food habits, health practices, table manners, group interaction, a sense of responsibility, and a cooperative attitude.

Many members of Congress and our State Legislature are to be commended for their tremendous efforts in our behalf. Our outstanding program is the result of a cooperative effort at the National, State, and Local level involving literally thousands of dedicated educators and professional food service personnel.

I have a very great respect for the many capable and dedicated school food service workers whom I have known as an administrator and met and observed while visiting schools across the State. I predict that Oklahoma will continue to be the Nation's pacesetter in the Child Nutrition Programs. This revised Handbook should provide a thoroughly practical reference and current guide for each person involved in planning and preparation of quality food for children in schools.

Leslie Fisher

ACKNOWLEDGEMENT

Oklahoma has had an excellent School Lunch Handbook since the early days of the National School Lunch Program. The book has been used as a reference in almost every area on school food management and production. As time progressed, additional or new aids for local personnel have been added. Each time it has been revised it has reached a new level of excellence.

Present and former staff members are given credit for their efforts in finding and screening materials to include. The Oklahoma Handbook is used in Continuing Education Workshops.

It is my pleasure to acknowledge my indebtedness to all those who have worked on this edition and those who have worked on earlier editions. I would also like to express my appreciation for the support and encouragement which this Section of the State Department of Education has received from the State Superintendent Dr. Leslie Fisher, the Deputy Superintendent Mr. Lloyd Graham, Associate Deputy Superintendent Mr. John Folks, and Assistant Superintendent Mr. J. D. Giddens.

Fred L. Jones

PREFACE

Food is important, especially during the developing years. School Food Service plays a major role in the total education of our school children, particularly as it affects their nutritional status and well being. Only if a child is well nourished will he be able to take full advantage of the opportunities he is offered in our schools.

Knowledge of nutrition needs is important to every person. The Child Nutrition Programs can be a student's learning laboratory for acquiring new health habits, improving social practices, and learning to eat new foods formerly rejected.

The staff of the School Lunch Section is proud to present this revision of the Oklahoma Handbook of the Child Nutrition Programs. A sincere attempt has been made to include and interpret School Food Service information that will assist food service personnel, superintendents, principals, and classroom teachers to offer children the maximum benefits in food, health, and well being in order to prepare them physically and mentally.

REVISED 1982

The Oklahoma State Department of Education, in compliance with Title VI of the Civil Rights Act of 1964 (P. L. 88-352) Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, sex, age, religion, handicap, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, educational and counseling services.

This publication was printed by University Printing Services, University of Oklahoma and issued by the Oklahoma State Department of Education as authorized by Leslie Fisher, State Superintendent of Public Instruction. 2,500 copies have been prepared and distributed at a cost of $16,157.62.

CONTENTS

Page

SECTION I.
(Part 1) NUTRITION NEEDS 1
(Part 2) SCHOOL LUNCH MEAL REQUIREMENTS—MENU PLANNING 19
(Part 3) SCHOOL BREAKFAST PROGRAM 51

SECTION II. RECIPES 65

SECTION III. QUANTITY FOOD PREPARATION 93

SECTION IV.
(Part 1) QUANTITY FOOD PURCHASING 119
(Part 2) QUANTITY FOOD PURCHASING (USDA DONATED FOODS) 165
(Part 3) INVENTORY CONTROL 175

SECTION V.
(Part 1) SCHOOL FOOD SERVICE BUDGETING 191
(Part 2) COST CONTROL 197

SECTION VI. FOOD STORAGE 207

SECTION VII. SANITATION AND SAFETY 221

SECTION VIII. SCHOOL FOOD SERVICE MANAGEMENT AND PERSONNEL ORGANIZATION 247

SECTION IX. SCHOOL FOOD SERVICE FACILITY PLANNING AND EQUIPPING 277

SECTION I
(Part 1)
NUTRITION NEEDS

Page

I. Nutrition Basics—Know the Facts 3
II. Guides to Good Nutrition 8
III. Nutrition Education in the Schools 11
    Five Food Groups 12
    Primary Sources and Functions of Nutrients 13
    Student and Parent Involvement 15
    Student Survey 18

BASICS OF NUTRITION

I. NUTRITION BASICS—KNOW THE FACTS

A. Nutrition is defined for our working knowledge.

1. Nutrition is the science of how food affects health and growth.
2. The study of nutrition involves not only an understanding of what is eaten but also why it is eaten. People use food to satisfy needs besides hunger. Recognizing these other needs gives a better understanding of dietary habits. Some people eat:
    - a. *For emotional security.* Certain foods are reminders of a time of happiness. When people are unhappy there is a tendency to eat those same foods to feel better.
    - b. *To belong to a group.* Joining friends for an after-school snack is part of being one of the gang.
    - c. *To be in style.* There are fashions in foods just as there are in clothes. From advertisements in newspapers, magazines, and commercials on radio and television, people are introduced to the "newest," the "latest," the "most up-to-date" in food products which they buy and eat to keep in style.
    - d. *To have pleasant taste sensations.* Foods that taste good are often eaten regardless of the effect on the body.
    - e. *To be sociable.* Often being together means eating together. Friends influence a person to eat or not to eat certain foods.
    - f. *To save time.* When in a rush, there is a tendency to choose convenience foods; foods that can be fixed quickly or eaten on the run.
    - g. *To save money.* When on a strict budget, inexpensive high-energy foods are usually selected.
    - h. *To achieve status.* In years past, white bread enjoyed more prestige than brown bread because it originally was more expensive and only prosperous people could afford it. For the same reason, many foods are consumed today as a way of showing that expense is no object.
3. Sound nutrition practices contribute to:
    - a. *Physical appearance.* Such characteristics as shiny hair, smooth, clear skin, bright eyes, strong bones and teeth, and acceptable weight range will be in evidence.
    - b. *Mental alertness.* Maximum attention span and awareness of surroundings are two such characteristics.
    - c. *Emotional well being.* Increased level of objectivity and increased capacity to respond cooperatively are evident.

B. Nutrients defined.

1. Nutrients are the substances found in food which are necessary for the functioning of the body.
    - a. About 40 nutrients are known to be needed by the body.
    - b. Most foods contain more than just one of the nutrients.
    - c. These nutrients work together to keep the body working properly.
2. Nutrients are needed to provide:
    - a. Fuel for energy which is measured in calories and varies according to individual, age, sex, health conditions, body size, occupational activities, recreational activities, and environment.
    - b. Material for building and maintaining body tissues.
        - (1) During periods of growth, nutrients are necessary to build the cells and tissues of the body. Children especially need the proper nutrients for optimum growth and development.

(2) Adults require the nutrients to maintain tissues.

c. Materials to regulate the body processes. Breathing, digestion, circulation of the blood, elimination, etc., are all regulated by the proper combinations of needed nutrients.

C. Nutrients are grouped into six classes. They are protein, carbohydrates, fats, vitamins, minerals, and water.

1. Protein is the basic substance in every cell of the body. It:

a. Builds and repairs all body tissues.
b. Helps form antibodies to fight infection.
c. Is part of hormones and enzymes which are responsible for regulating body functions such as digestion and growth.
d. Is made up of chemical substances called amino acids.

(1) Eight of the 22 known amino acids are considered essential because the body cells cannot manufacture them.
(2) Proteins from animal sources are called complete proteins because they contain the eight essential amino acids which are necessary for life.
(3) Proteins from plant foods are called incomplete protein because some essential amino acids are not present.
(4) Specific combinations of foods from animal sources can be used to supplement the incomplete protein in plant foods. Examples include macaroni and cheese, rice pudding made with milk, and cereal with milk.
(5) The protein in foods from several different plant sources can complement each other in such a way to supply all eight essential amino acids. Examples include cornbread with beans, corn tortillas with beans, rice with beans, and peanut butter with bread.

e. Is used to supply the body's energy needs when less than adequate amounts of carbohydrates and fats are consumed.
f. Is stored as body fat when not used for building tissue or supplying energy.

2. Carbohydrates are the major source of energy in the diet. They:

a. Supply fuel for energy and help the body make the best use of other nutrients.
b. Perform a protein-sparing function. This means that when carbohydrates are present in sufficient amounts to provide fuel needed for energy, protein can be left to build and repair body cells and tissues.
c. Are found primarily in foods from plant sources (fruits, vegetables, grains and grain products), and milk and milk products.
d. Are supplied in three forms: starches, sugars, and cellulose (fiber).

(1) Carbohydrate in vegetables and grain products is in the form of starch.
(2) Carbohydrate provided by fruit and milk products is in the form of sugar. Cane and beet sugars, jellies, jams, candy and other sweets, honey, molasses and syrups are concentrated sources of sugar.
(3) Fruits, vegetables, and whole grain products provide cellulose. Unlike other carbohydrates, cellulose provides no energy, but is needed to aid in regular elimination.

e. Meet emergency needs. Energy unused from carbohydrate is stored in the liver and muscles as glycogen to meet emergency energy needs. Excesses are stored as body fat.

3. Fat is a concentrated source of energy. It:

a. Supplies a large amount of energy in a small amount of food.

(1) Weight for weight, it gives more than twice as much energy (calories) than either carbohydrate or protein.
(2) One gram of fat yields nine calories as compared to four calories from one gram of protein or carbohydrate.

b. Carries the fat-soluble vitamins, A, D, E, and K.
c. Is needed for healthy skin.
d. Helps delay hunger feelings.
e. Is classified as saturated, polyunsaturated, and monounsaturated.

(1) Saturated fats come from animal and vegetable sources, but chiefly from animal fats such as butter, whole milk, and the fat in meat. Coconut oil is the only highly saturated fat from a plant source. Saturated fats are usually hard at room temperature. When processing changes plant oils to solids, the fat becomes more saturated.
(2) Polyunsaturated fats are usually oils and are most abundant in plant seeds and fish oils. Vegetable oils such as cottonseed, corn, soybean, and safflower are about half polyunsaturated fat; the other half is saturated.
(3) Olive and peanut oil, examples of monounsaturated fats, are more saturated than polyunsaturated fats.

4. Vitamins play a dramatic role in body processes. They:

a. Take part in the release of energy from foods, promote normal growth of different kinds of tissue, and are essential to the proper functioning of nerves and muscles.
b. Are either fat-soluble, those which can be dissolved in fat; or water-soluble, those which can be dissolved in water.

(1) Fat-soluble

(a) Vitamin A
—Is needed for ideal growth of all body cells. It helps keep the skin and inner linings of the body healthy and resistant to infection.
—Is necessary for normal vision. It keeps the eyes moist and tear ducts functioning and combines with protein to form a substance called visual purple. Visual purple regulates the ability of the eye to adapt to changes in light, making night vision and vision in dim light possible.
—Is essential for normal skeletal and tooth development. Without sufficient amounts of vitamin A, bones do not grow in length and the normal remodeling process does not take place.

—Is present only in foods from animal sources. The best sources are fish-liver oils, liver, butter, fortified margarines, egg yolk, whole-milk cheese, and milk.
—Is derived from carotene found in dark green and deep yellow fruits and vegetables. The best sources of plant foods which supply carotene are beet greens, carrots, dried apricots, spinach, sweet potatoes, turnip tops, pumpkin, winter squash, chard, cantaloupe, broccoli, asparagus, and fresh peaches.
—Is stable to usual cooking temperatures. Wilting of vegetables or dehydration of foods result in considerable losses of this nutrient. Vitamin A, a fat-soluble vitamin, is rapidly lost in rancid fats.

(b) Vitamin D (sunshine vitamin)

—Is important in building strong bones and teeth because it enables the body to use the calcium and phosphorus supplied by food.
—Is contained naturally in only a few foods. Small amounts are present in egg yolk, butter, and liver; larger amounts occur in sardines, salmon, herring, tuna, and fish-liver oils.
—Can be added (fortified) to milk as a practical source.
—Is produced in the body by the action of direct sunlight on the skin. For this reason, it is known as the sunshine vitamin.
—Is insoluble in water and stable to heat, light, alkalis, and air.

(c) Vitamins A and D can be harmful to the body when consumed in excess amounts over prolonged periods of time.

(2) Water-soluble

(a) Thiamin (vitamin B_1)

—Promotes a good appetite and a healthy central nervous system.
—Is necessary as a coenzyme (a substance that starts and/or helps a chemical reaction) for carbohydrate to be used for energy.
—Is present in many foods. The best sources of this vitamin are lean pork, sausage, peanuts, egg yolk, liver, organ meats, whole grain and enriched breads and cereals, legumes, and green leafy vegetables.
—Is easily destroyed by alkalis such as baking soda.
—Is stable to heat, light, and acids.

(b) Riboflavin (vitamin B_2)

—Helps the cells use oxygen and is needed for healthy skin and good vision in bright light.
—Is necessary as a coenzyme that participates in the production of energy within the cells.
—Most important sources are milk and milk products such as cheese, eggs, liver, meat, whole grain and enriched breads and cereals, and green leafy vegetables.
—Is quickly destroyed by light and is sensitive to alkaline solutions.
—Is stable to heat and acids.

(c) Niacin (vitamin B_3)

—Promotes normal appetite and digestion and is necessary for a healthy nervous system.
—Is needed as a coenzyme to aid in the utilization of carbohydrate for energy.
—The best sources include liver, peanuts and peanut butter, whole grain and enriched breads and cereals, fish, meat, and poultry.
—Is very stable to heat, light, acid and alkali.

(d) Vitamin C (ascorbic acid)

—Helps form and maintain the cementing material, collagen, that holds the cells of the body together.
—Strengthens the walls of the blood vessels, assists in normal tooth and bone formation, aids in healing wounds, and helps the body resist infection.
—Rich sources include kale, broccoli, brussels sprouts, green peppers, cauliflower, strawberries, lemons, spinach, oranges, mustard greens, turnip greens, potatoes and sweet potatoes (especially when cooked in the jacket), tomatoes and tomato juice, cantaloupe, grapefruit, watermelon, and citrus fruits and juices.
—Is the most easily destroyed. It is highly soluble in water and is easily oxidized by heat, light, and alkalis.

(3) Other vitamins

(a) There are about half a dozen or so other vitamins which are needed by the body on a regular basis. Each of these other vitamins has a specific function in the body.

(b) Although the amounts of each of these other vitamins needed is not specified, a well-chosen assortment of foods will provide all the vitamins a person needs.

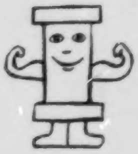
5. Minerals, substances which are found in the ground, are supplied to us either through plants which draw them from the ground or from animals that eat the plants.

a. Calcium

(1) Is the most abundant mineral element in the body.

(2) Unites with phosphorus to give strength and structure to bones and teeth. About 99% of the calcium in the body is found in these two tissues. The other 1% is found in other body tissues and fluids and aids in the proper functioning of the heart, muscles, nerves, and helps the blood to clot during bleeding.
(3) The best sources of calcium are milk and cheddar cheese. Good sources are cottage cheese, ice cream, dark green leafy vegetables (collards, kale, mustard greens and turnip greens), sardines and salmon (if the bones are eaten), and shellfish.

b. Iron



(1) Is needed by the body to combine with protein to make hemoglobin; the red substance of blood that carries oxygen from the lungs to the body cells and removes carbon dioxide from the cells.
(2) Helps the cells obtain energy from food.
(3) Only a few foods contain much iron. Liver is a good source. Lean meats, heart, kidney, shellfish, dry beans and peas, dark green vegetables, dried fruit, egg yolk, and molasses are good sources. Whole grain and enriched breads and cereals contain smaller amounts but when eaten frequently become important sources.
(4) Using cast-iron cookware can add appreciable amounts of iron to the diet.

c. Other Minerals.

(1) The body needs as many as 18 to 20 minerals to regulate the body processes and build certain body structures.
(2) In addition to calcium and iron, other essential minerals include phosphorus, iodine, and fluorine.
(3) Although sources of each of the essential minerals are not specified, a well-chosen assortment of foods will provide the minerals needed by the body.

6. Water.

a. Is essential for life. It ranks next to air, or oxygen, in importance. The body's need for water even exceeds its need for food. One can live for weeks without food but only a few days without water. It:

(1) Makes up about ½ to ⅔ of the body.
(2) Is the medium of body fluids, secretions, and excretions. It carries nutrients to and waste from all body cells.
(3) Is needed in the chemical reactions that take place in the body.
(4) Regulates the body temperature by evaporation through the skin and lungs.
(5) Is necessary to aid in the digestion and absorption of other nutrients.

b. The body gets water from many sources.

(1) The most obvious is drinking water, but this often represents only a small part of total intake.
(2) Beverages (juice, milk, coffee, tea) and soups are other sources.
(3) Foods such as vegetables, fruits, meat, bread, and dry cereals contain some water.

D. Preservation of nutrients depends upon methods of handling.

1. Nutrients vary greatly in their stability.

a. Some of them may be lost as a result of food handling methods.
b. Nutritive value of foods may be destroyed or damaged by air, light, heat, acids, and alkalis.

2. Nutritive value of foods can be retained during preparation by reducing:

a. The amount of water used.

(1) Ascorbic acid (vitamin C), all of the B vitamins including thiamin, riboflavin, and niacin, and some minerals are water-soluble. This means that they can be

dissolved in water and may be lost or destroyed when an excessive amount of water is used in the preparation of foods.

(2) Avoid heating vegetables in more than a minimum of water or soaking for a prolonged period.

(3) Keep the cooking water from vegetables and add it to soups, sauces, and gravies. Vitamins and minerals that might otherwise be poured down the drain are retained.

(4) Thiamin losses are considerable when rice is washed before cooking and when it is cooked in a large amount of water that is later poured down the drain.

(5) The drippings and juices, which are released when meats are cooked, contain many of the B vitamins and minerals. Treat meat juices with the same respect as water from cooked vegetables.

b. The length of cooking time.

(1) The longer a food is cooked, the more nutrients are destroyed. By starting a vegetable in cold water, many nutrients are lost before the water begins to boil. Minimize losses by keeping the cooking time as short as possible.

(2) Ascorbic acid is destroyed by heat. Retain the vitamin C content by serving foods raw or cooking only long enough to make the food palatable.

(3) Some of the B vitamins, especially thiamin, are destroyed by heat. To preserve these nutrients:

(a) Cook meat at a moderate temperature.

(b) Cook only long enough to bring the meat to its recommended internal temperature.

(4) Adding an alkali (baking soda) to the cooking water may preserve the color of green vegetables but will destroy some of the vitamins, especially vitamin C, thiamin, and riboflavin.

c. The amount of surface area exposed.

(1) The more of a vegetable or fruit exposed to the air, the greater the vitamin loss.

(2) Vegetables almost always need a little trimming to remove damaged parts. Discarding any amount reduces the nutrients originally present. Different parts of the plant differ in nutrient content. The outer leaves contain higher concentrations of vitamins and minerals than the more tender leaves and buds they protect. Remove only the damaged parts to retain the highest concentration of nutrients.

(3) Ascorbic acid is destroyed by exposure to air and light. Leaving chopped cabbage or other vitamin C rich food exposed to air and light destroys much of the vitamin C.

(4) Bruising damages plant tissues and reduces nutritive value.

(5) Light has a destructive effect on riboflavin. Milk exposed to direct sunlight for several hours will lose the major portion of the riboflavin it contains.

II. GUIDES TO GOOD NUTRITION

A. The RDA (Recommended Dietary Allowances) are the levels of essential nutrients considered by the Food and Nutrition Board, National Academy of Sciences of the National Research Council, on the basis of available scientific knowledge, to be adequate to meet the known nutritional needs of practically all healthy persons in the United States. The purpose of these recommendations is to identify the amounts of nutrients needed by healthy, normal Americans to promote good growth for children and optimum health for all.

1. The allowances have been established for 17 different population groups. They are based on variations in age, sex, weight, and height, with adjustments made for periods of pregnancy and lactation.

   a. The recommendations are not requirements for individuals. Rather, they are used as guides in planning food supplies and diets for population groups.
   b. Nutrient requirements vary widely from one individual to another because of variations in body build, genetic makeup, etc. The RDA is set high enough to meet the needs of practically all healthy people in the United States.

2. The RDA table lists recommendations for about ⅓ of the nutrients needed each day. It is assumed that if the need for these nutrients is met through a diet which includes a wide variety of foods, the need for the other nutrients will also be met.

B. The five food groups are defined.
A balanced diet is one that includes a sufficient variety of foods to ensure that an individual takes in all the nutrients the body needs on a regular basis. For convenience in thinking about which foods supply which nutrients in abundance, nutritionists have divided foods into five groups. They are based on the RDA and help translate nutrient needs into terms of foods widely available. By selecting a variety of foods from each of these groups each day, the individual's need for nutrients should be met.

1. *MEAT GROUP*—Two basic servings daily are recommended.
   a. What's a serving?
      (1) Includes beef, veal, lamb, pork, poultry, fish, shellfish (shrimp, oysters, crabs, etc.), organ meats (liver, kidney, etc.), dry beans or peas, soybeans, lentils, eggs, seeds, nuts, peanuts, and peanut butter.
      (2) Count 2 to 3 ounces of lean, cooked meat, poultry, or fish without bone as a serving. One egg, ½ to ¾ cup cooked dry beans, dry peas, soybeans, or lentils, 2 tablespoons peanut butter, and ¼ to ½ cup nuts, sesame seeds, or sunflower seeds count as 1 ounce of meat, poultry, or fish.
   b. What's in it for you?
      (1) These foods are valued for the protein, phosphorus, vitamins B_6, B_{12}, and other vitamins and minerals they provide. However, only foods of animal origin contain vitamin B_{12} naturally.

      (2) It's a good idea to vary choices among these foods as each has distinct nutritional advantages. For example, red meats and oysters are good sources of zinc. Liver and egg yolks are valuable sources of vitamin A. Dry beans, dry peas, soybeans, and nuts are worthwhile sources of magnesium. The flesh of fish and poultry is relatively low in calories and saturated fat. Seeds (sunflower and sesame, for example) contribute polyunsaturated fatty acids which are an essential part of a balanced diet.
      (3) Cholesterol, like vitamin B_{12}, occurs naturally only in foods of animal origin. All meats contain cholesterol, which is present in both the lean and the fat. The highest concentration is found in organ meats and in egg yolks. Fish and shellfish, except for shrimp, are relatively low in cholesterol. (Dairy products also supply cholesterol.)

2. *MILK GROUP*—The basic servings daily, based on servings of fluid milk, are:

Children under 9	2 to 3 servings	Adults	2 servings
Children 9 to 12	3 servings	Pregnant women	3 servings
Teens	4 servings	Nursing mothers	4 servings

   a. What's a serving?

      (1) Includes milk in any form: whole, skim, lowfat, evaporated, buttermilk, and nonfat dry milk; also yogurt, ice cream, ice milk, and cheese, including cottage cheese.
      (2) Count one 8-ounce cup of milk as a serving.
      (3) Common portions of some dairy products and their milk equivalents in calcium are:

1 cup plain yogurt = 1 cup milk
1 ounce cheddar or swiss cheese (natural or processed) = ¾ cup milk
1 inch cube cheddar or swiss cheese (natural or processed) = ½ cup milk
1 ounce processed cheese food = ½ cup milk
½ cup ice cream or ice milk = ⅓ cup milk
1 tablespoon or ½ ounce processed cheese spread or 1 tablespoon parmesan cheese = ¼ cup milk
½ cup cottage cheese = ¼ cup milk

NOTE: The body will get about the same amount of calcium in each of these portions but varying amounts of calories.

(4) Milk used in cooked foods—such as in creamed soups and sauces, puddings—can count toward filling the daily quota in this group.

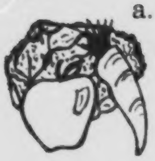
b. What's in it for you?

(1) Milk and most milk products provide calcium and riboflavin and contribute protein and vitamins A, B_6, and B_{12}. They also provide vitamin D when fortified with this vitamin.
(2) Fortified (with vitamins A and D) lowfat or skim-milk products have essentially the same nutrients as whole-milk products but fewer calories.

3. *FRUITS AND VEGETABLES GROUP*—Four basic servings daily are suggested.

Include one good source of vitamin C each day. Also, frequently include deep-yellow or dark-green vegetables for vitamin A. Unpeeled fruits and vegetables and those with edible seeds, such as berries, provide fiber.

a. What's a serving?



(1) Includes all fruits and vegetables.
(2) Count ½ cup as a serving, or a typical portion—one orange, half a medium grapefruit or cantaloupe, juice of one lemon, a wedge of lettuce, a bowl of salad, and one medium potato.

b. What's in it for you?

(1) This group is important for its contribution of vitamin A, vitamin C, and fiber, although individual foods in this group vary widely in how much of these they provide.
(2) Dark-green and deep-yellow vegetables are good sources of vitamin A. Most dark-green vegetables, if not overcooked, are also reliable sources of vitamin C, as are citrus fruits (oranges, grapefruit, tangerines, lemons), melons, berries, and tomatoes. Dark-green vegetables are valued for riboflavin, folacin, iron, and magnesium. Certain greens—collards, kale, mustard, turnip, and dandelion—provide small amounts of calcium. Nearly all vegetables and fruits are low in fat, and none contain cholesterol.

4. *BREAD AND CEREAL GROUP*—Four basic servings daily are recommended.

Select only whole-grain, enriched or fortified products. Check labels.

a. What's a serving?

(1) Includes all products made with whole grains, enriched flour or meal: bread, biscuits, muffins, waffles, pancakes, cooked or ready-to-eat cereals, cornmeal, flour, grits, macaroni, spaghetti, noodles, rice, rolled oats, barley, and bulgur.
(2) Count as a serving 1 slice of bread, ½ cup to ¾ cup cooked cereal, cornmeal, grits, macaroni, noodles, rice, spaghetti, or 1 ounce of ready-to-eat cereal.

b. What's in it for you?

(1) These whole-grain or enriched foods are important sources of B vitamins and iron. They provide protein and are a major source of this nutrient in vegetarian diets. Whole-grain products also contribute magesium, folacin, and fiber.

(2) Most breakfast cereals are fortified at nutrient levels higher than those occurring in natural whole-grain. In fact, some fortification adds vitamins not normally found in cereals (vitamins A, B_{12}, C, and D). However, even these cereals, if refined, and other refined products (enriched or not), may be low in some other vitamins and trace minerals, which are partially removed from the whole grain in the milling process and are not restored. For this reason, it's a good idea to include some less refined or whole-grain products in the diet.

5. *FATS AND SWEETS GROUP*—In general, the amount of these foods to use depends on the number of calories required. It's a good idea to concentrate first on the calorie plus-nutrient foods provided in the other groups as the basis of a daily diet.

a. What's a serving?

(1) Includes foods like butter, margarine, mayonnaise, salad dressings and other fats and oils; candy, sugar, jams, jellies, syrups, sweet toppings, and other sweets; soft drinks and other highly sugared beverages. Also included are refined but unenriched breads, pastries, and flour products. Some of these foods are used as ingredients in prepared foods or are added to food at the table. Some are just "extras."

(2) No serving sizes are defined because a basic number of servings is not suggested for this group.

b. What's in it for you?

(1) These products, with some exceptions such as vegetable oils, provide mainly calories. Vegetable oils generally supply vitamin E and essential fatty acids.

(2) Fats and oils have more than twice the calories, ounce for ounce, as protein, starches, or sugars but keep hunger pangs away longer.

(3) Unenriched, refined bakery products are included here because, like other foods and beverages in this group, they usually provide relatively low levels of vitamins, minerals, and protein compared with calories.

C. Dietary Guidelines for Americans are recommended.

These guidelines are intended for people who are already healthy. They do not apply to people who need special diets because of diseases or conditions that interfere with normal nutrition. These people may require special instruction from trained dietitians, in consultation with their own physicians.

The guidelines do not guarantee health or well-being. Health depends on many things including heredity, lifestyle, personality traits, mental health and attitudes, and environment, in addition to diet. Food alone cannot make you healthy, but good eating habits based on moderation and variety can help keep you healthy and even improve your health.

1. Eat a variety of foods.
2. Maintain ideal weight.
3. Avoid too much fat such as saturated fat and cholesterol.
4. Eat foods with adequate starch and fiber.
5. Avoid too much sugar.
6. Avoid too much sodium, as found in table salt and many foods.

Five Food Groups

	Meat	Milk*	Vegetables & Fruits	Breads & Cereals	Fats & Sweets
What's Included?	Beef, Veal, Lamb, Pork, Poultry, Fish, Shellfish (Shrimp, Oysters, Crabs, etc.), Organ Meats (Liver, Kidneys, etc.), Dry Beans or Peas, Soybeans, Lentils, Eggs, Seeds, Nuts, Peanuts and Peanut Butter.	Milk in any Form: Whole, Skim, Lowfat, Evaporated, Buttermilk, Nonfat Dry Milk, Yogurt, Ice Cream, Ice Milk, and Cheese.	All Vegetables and Fruits.	All Products Made With Whole Grain or Enriched Flour or Meal: Bread, Biscuits, Muffins, Waffles, Pancakes, Cooked or Ready-to-Eat Cereals, Cornmeal, Flour, Grits, Macaroni and Spaghetti, Rice, Noodles, Rolled Oats, Barley and Bulgur.	Butter, Margarine, Mayonnaise and Other Salad Dressings, and Other Fats and Oils; Candy, Sugar, Jams, Jellies, Syrups, Sweet Toppings, Other Sweets; Soft Drinks and Other Highly Sugared Beverages, Alcoholic Beverages; Refined but Unenriched Breads, Pastries and Flour Products.
What's a Serving?	2 to 3 Ounces of Lean, Cooked Meat, Poultry, or Fish; 2 Eggs; 1 to 1½ Cups Cooked Dry Beans, Peas, Soybeans or Lentils; 4 Tablespoons Peanut Butter; ½ to 1 Cup Nuts, Sesame Seeds, or Sunflower Seeds.	1 8-oz. Cup Milk** 1 Cup Plain Yogurt 1⅓ oz. Cheddar or Swiss Cheese 2-in. Cube of Swiss or Cheddar Cheese 2 oz. Process Cheese Food 1½ Cups Ice Cream or Ice Milk 2 Cups Cottage Cheese 4 Tablespoons or 2 oz. Process Cheese Spread 4 Tablespoons Parmesan Cheese.	½ Cup or a Typical Portion: 1 Orange, Apple, or Banana ½ Medium Grapefruit or Cantaloupe, Juice of 1 Lemon, Wedge of Lettuce, Bowl of Salad, or 1 Medium Potato.	1 Slice Bread ½ to ¾ Cup Cooked Cereal, Cornmeal, Grits, Macaroni, Noodles, Rice, or Spaghetti 1 oz. Ready-to-Eat Cereal.	Serving Sizes Are Not Defined.
Basic Servings Daily:					
Child	2	2 to 3	4	4	Number of Servings Daily Is Not Suggested as Foods & Beverages in this Group Provide Relatively Low Levels of Protein, Vitamins, & Minerals Compared to Calories.
Teenager	2	4	4	4	
Adult	2	2	4	4	
Pregnant Woman	3	3	4	4	
Lactating Woman	2	4	4	4	
		*Only Fluid Milk May Be Used to Meet State and National Child Nutrition Program Requirements.	**Amounts Given Are for Calcium Equivalents; Refer to USDA Buying Guide for Protein Equivalents.		

Primary Sources and Functions of Nutrients

Nutrients		Major Functions			Primary Sources				
		Fuel For Energy	Build and Maintain	Regulate	Meat Group	Milk Group	Vegetables & Fruits Group	Breads & Cereals Group	Fats, Sweets & Other Sources
Protein		*	*	*	Meats, Poultry, Fish, Eggs, Legumes, Peanuts Complete Protein	Milk, Cheese, Ice Cream, Yogurt Complete Protein	Incomplete Protein	Incomplete Protein	
Carbohydrate		*		*		Milk, Cheese, Ice Cream, Yogurt	All Vegetables & All Fruits	All Grain Products, Whole Grain Products	Sugars, Jelly, Jams, Honey, Candy & Other Sweets Are Concentrated Sources
Fat		*		*	Fat from Meats	Whole Milk & Whole Milk Products			Vegetable Oils, Cottonseed, Corn, Safflower, Soy Bean, Margarine, Butter
Vitamins	A			*	Liver, Egg Yolk	Milk, Whole Milk, Cheese, Ice Cream	Carotene in Dark Green & Deep Yellow Vegetables & Fruits		Fish Liver Oil, Butter, Fortified Margarine, Cream
	D			*	Sardines, Salmon, Herring, Tuna	Fortified Milk			Fish Liver Oil, Direct Sunlight
	C			*			Green Peppers, Broccoli, Citrus Fruit, Strawberries, Cabbage, Tomatoes		
Minerals	Thiamin			*	Lean Pork, Organ Meats, Nuts, Legumes		Green Leafy Vegetables	Whole Grain & Enriched	
	Ribo-Flavin			*	Liver, Meat, Eggs	Milk and Milk Products	Green Leafy Vegetables	Whole Grain & Enriched	
	Niacin			*	Liver, Meat, Fish, Poultry, Peanuts, Peanut Butter			Whole Grain & Enriched	
	Calcium		*	*	Salmon & Sardines with Bones, Shellfish	Milk and Milk Products	Collards, Kale, Mustard Greens, Turnip Greens		
	Iron		*	*	Liver, Lean Meat, Shellfish, Dry Beans & Peas, Egg Yolk		Dark Green Vegetbles, Dried Fruits	Whole Grain & Enriched	Molasses, Cast-Iron Cookware
Water				*	All	All	All	All	

III. NUTRITION EDUCATION IN THE SCHOOLS

A. It has been said that nutrition is to total health what reading is to total education.

  1. The relationship between the food we eat and good health and physical fitness is no longer questioned. Favorable combinations and adequate amounts of nutritious foods are essential in all stages of development.
  2. By providing a sound foundation through nutrition education, the health and well being of the individual and our nation as a whole will be improved.

B. The Federal Nutrition Education and Training Program was designed to promote understanding.

  1. In October, 1977, Congress passed Public Law 95–166, establishing a system of grants to state education and training programs, using the School Food Service Program as a learning laboratory.
  2. This legislation amended the Child Nutrition Act by adding Section 19, which states:
     a. The proper nutrition of the nation's children is a matter of highest priority.
     b. The lack of understanding of the principles of good nutrition and their relationship to health can contribute to a child's rejection of highly nutritious foods and consequent plate waste in school food service operations.
     c. Many school food service personnel have not had adequate training in food service management skills and principles.
     d. Many teachers and school food service operators have not had adequate training in the fundamentals of nutrition and cannot convey the information necessary to motivate children to practice sound eating habits.
     e. Parents exert a significant influence on children in the development of nutritional habits, and lack of nutritional knowledge on the part of parents can have detrimental effects on children's development.
     f. There is need to create opportunities for children to learn about the importance of the principles of good nutrition in their daily lives and how these principles are applied in the school cafeteria.

C. The Oklahoma Nutrition Education and Training Program (NET Program) contributes to curriculum.

  1. NET Program activities in Oklahoma have included curriculum development, staff development, and establishment of a statewide materials support system.
     a. Curriculum development included:
        (1) A curriculum guide, *Creative Nutrition Education: An Integrated Approach, K–6.*
        (2) A teacher's guide for nutrition education television series for middle and junior high school students.
     b. Staff development was designed to provide:
        (1) Inservice training programs for cooks and managers of child care programs; school food service personnel; and classroom teachers.
        (2) Local elementary school teams trained to implement nutrition education programs. The teams were comprised of teachers, administrators, parents, and school food service personnel.
     c. Statewide materials support systems were developed to include:
        (1) Printed materials that are provided free, on request, by the School Lunch Section.
        (2) Audio-visual resources that are loaned at no cost through the State Department of Education Media Resource Center. Slide cassette programs for staff development are available.
        (3) A television series for middle schools. This series of 15-minute contemporary programs was developed through a consortium effort, for classroom learning.

2. A needs assessment for Oklahoma was conducted.
    a. As part of Public Law 95–166, the Child Nutrition Act, Congress mandated a needs assessment which, among other items, included identification of nutrition education needs for children.
    b. Information obtained in the survey related to meal patterns and foods eaten in the 24 hours preceding the survey.
    c. The findings indicated that only 15% of the students surveyed had an adequate diet.
    d. The implications for nutrition education, based on the findings of the survey were clear. A vigorous program of nutrition education is needed for students, parents, and teachers.
        (1) Since parents and teachers are the most common sources of nutrition information, programs need to be aimed at increasing their competence.
        (2) Television may be a relatively unused source of "good food" information.
        (3) More than the Basic Four Food Groups need to be taught.
        (4) Since eating school lunch made a difference in the adequacy of students' diets, nutrition education programs need to stress school lunch participation.

D. The school cafeteria is a classroom.
1. A school lunchroom is a learning laboratory. It is a place where practice and theory are combined, a part of the total educational experience.
    a. A child must be taught to eat foods needed to develop a strong, healthy body.
    b. One cannot teach a hungry child. There is a high correlation between a child's diet and his or her behavior patterns. A child who is well fed is more likely to be physically sound and mentally alert.
2. The school food service program is an integral part of the total education of children.
    a. School food service personnel should provide nutrition education activities.
    b. Active support of the school administrator in the implementation of nutrition education is essential.
    c. Coordination of plans and efforts with the teaching staff will provide for an enrichment of the other nutrition education programs that are being offered.
    d. Cafeteria personnel can provide the setting for creative nutrition education experiences in the lunchroom.
    e. Inform the students and parents of the role of the school food service program to gain their interest and involvement in nutrition education.

E. Plan and implement a program to involve students and parents.
1. Requirements are listed for student and parent involvement.
    a. A regulation for the National School Lunch Program issued in August, 1979, by the United States Department of Agriculture requires school food authorities to promote activities to involve students and parents in the school lunch program.
    b. The School Lunch Section does not require any specific form of student or parent involvement.
    c. The choice of form is left to the discretion of the individual school food authority to meet individual needs within the local school structure.
2. One such program that meets requirements is the Youth Advisory Council (YAC).
    a. The purpose of a YAC is to promote the school food service program and nutrition education. In this manner the student body assumes an active role in the school breakfast and/or lunch program. The YAC could:
        (1) Help to plan
            (a) Menus that are nutritious and attractive.
            (b) Special events which center in the lunchroom, making it a central part of the school for a large variety of educational programs.

   - (2) Conduct studies that reflect attitude and food acceptance resulting in improved food quality and less plate waste.
   - (3) Help to improve the atmosphere of the school lunchroom in a variety of ways.
   - (4) Serve as a communication bridge between the school food service program, the administration, the faculty, and the entire student body.
   - (5) Promote nutrition education among students by encouraging increased participation in school food service programs.

b. An assessment of what is currently being done, what needs to be done, and resources available should be made prior to setting up a YAC.

   - (1) Objectives and goals should reflect the findings of the assessments.
   - (2) A committee of interested and supportive teachers, parents, students, administrators, food service workers, the school nurse, local health and nutrition professionals, and other community groups could be formed to assist in planning and carrying out activities.

c. The following steps involved in organizing a YAC can provide a sound foundation for the group:

   - (1) Arrange a meeting of support committee.
   - (2) Select a YAC advisor who is interested in the growth and development of young adults, school food service and nutrition education, and who will provide incentive and guidance for the group.
   - (3) Decide on how the membership is to be selected. The total number of YAC members will depend on the size of the school and the grade levels involved. One or two representatives from each grade (or classroom) is usually adequate. Keep in mind that too small a group may not be able to accomplish the objectives and goals while too large a group can lose effectiveness.
   - (4) Draft a working constitution stating the purpose, authority, membership requirements, officer elections, meeting dates, and official committees of the YAC organization.
   - (5) Elect a chairman, co-chairman, and secretary-treasurer from the membership.
   - (6) Select and carry out a simple, well-organized project that will attract the attention of students and teachers.

d. Suggested activities for a YAC are:

   - (1) Conduct guided tours of the kitchen facility. This activity can stimulate interest in the school food service program and make the student body aware of the work involved in quantity food production.
   - (2) Conduct food tasting and product evaluation sessions. In this way, new foods can be introduced and evaluated before being included as part of the school food service program menus. Discuss the method of preparation used and the nutritional value of the food.
   - (3) Conduct food preference surveys to determine food likes and dislikes of the students. The results of the surveys can aid in planning meals that students like and increase participation in the school food service program. (See "Student Survey" in this section.)
   - (4) Prepare bulletin board displays. These displays can help to inform the student body of various YAC activities, provide information about the school food service program, advertise the school menu, or provide basic nutrition information.
   - (5) Sponsor a nutrition week in the cafeteria.
     - (a) National School Lunch Week is a good opportunity to provide special recognition for school food service.
     - (b) Invite parents, grandparents, and members of the community to have lunch at school. A brochure prepared by the YAC could be distributed at this time.
     - (c) A Food Service Appreciation Week could be held and special awards could be presented to the food service employees.

(6) Decorate the cafeteria. Prepare room and table decorations for special occasions to improve the appearance of the lunchroom. Make the cafeteria the "in" place to be at lunchtime.

(7) Prepare newspaper publicity for the school and local newspaper. Inform the student body and the community about the school food service program and the contributions it makes to good nutrition.

(8) Visit elementary school classrooms and provide skits or shows about the school food service program, the importance of eating well-balanced meals, the selection of good snack foods, or the Five Food Groups.

(9) Plan a "Foreign Foods Fair." Prepare and serve menus featuring foods from other lands. This activity could be done on a regular basis. The YAC could research foods from other countries and plan a menu to be prepared and served for lunch.

(10) Seek community support and involvement.

  (a) Produce a slide show aimed at creating nutrition awareness. This presentation could be used to inform the community as well as the student body of YAC activities.

  (b) Speak to civic organizations: The Chamber of Commerce, Lions, Rotary, Kiwanis, P.T.A., and other concerned community groups.

  (c) Present an "Honorary YAC Certificate" to groups voicing enthusiastic support of student involvement in the school food service program.

3. Documentation of all activities promoting student and parent involvement should be kept. Such documentation could include:

   a. A copy of the plan for student and parent involvement in the school food service program including a list of activities to perform, a time frame for implementation, and progress reports of each activity.
   b. Copies of menus, newsletters, handouts, etc., which are distributed to students and parents with the date of distribution.
   c. Copies of news releases, public announcements, etc., pertaining to the school food service program.

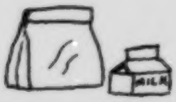
4. Results of student and parent involvement should be:

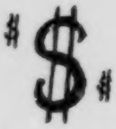
   a. Improved acceptability of the school food service program.
   b. Increased school food service participation.

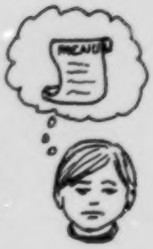
STUDENT SURVEY

1. Do you eat lunch at school? YES ______ NO______ SOMETIMES______

If NO, check as many as apply.







______I prefer a bag lunch from home.
______Prices are too high.
______I don't like the food.
______There is not enough time to go through the line and eat.
______I eat off campus.
______I don't care for the atmosphere.

2. On the average, how many times a week do you eat school lunches?

______One
______Two
______Three
______Four
______Five
______I don't eat school lunches.

NOTE: IF YOU DON'T EAT LUNCH AT SCHOOL, STOP HERE AND RETURN THIS FORM.

3. List your least liked foods served in the school cafeteria.

4. What role do you think students should have in the school's food service program?

______Clean up
______Helping to plan menus
______Decorating or arranging the lunchroom
______Supervising the lunchroom
______Helping to serve meals
______Other

5. What word best expresses your opinion of school lunches?

______Excellent
______Good
______Fair
______Poor

6. List your four favorite foods served in the school cafeteria.

SECTION I
(Part 2)
SCHOOL LUNCH MEAL REQUIREMENTS—MENU PLANNING

Page
I. National School Lunch Meal Requirements 21
II. Planning School Lunches for Various Age/Grade Groups 23
III. A System for Menu Planning 23
  School Lunch Pattern (Chart No. 1) 24
IV. Guidelines for Reducing Sugar, Fat, and Salt in School Meals 28
  Classification of Food (Chart No. 2) 30
  Foods Containing Relatively High Levels of Fat, Sugar, and Salt—"Major Sources" (Chart No. 3) 33
V. Cycle Menus: An Effective Management Tool 34
VI. School Food Service Programs Must Satisfy Customers to Increase Participation 35
  6 Weeks Cycle Menu Charted as to Week of Year to be Served (Chart No. 4) 35
VII. Choice Menus 36
VIII. Variations of the School Meal Pattern 36
IX. Evaluation of the Menu 38
X. Common Errors in Menu Planning 40
XI. Reasons for Poor Acceptance of Menus 41
XII. The Oklahoma Menu Planning Book 41
  6 Weeks Cycle Menu Planning Worksheets (Sample No. 1) 42
  Frequency of Items Served in 6 Week Cycle (Sample No. 2) 43
  6 Weeks Cycle Menu Planning Worksheet—2 Choices (Sample No. 3) 45
  6 Weeks Cycle Menu Planning Worksheet—3 Choices (Sample No. 4) 47
  Check-List for Menu Evaluation (Sample No. 5) 50

THE NATIONAL SCHOOL LUNCH PATTERN

I. NATIONAL SCHOOL LUNCH MEAL REQUIREMENTS

A. The goal of every school food service program is to serve nutritionally adequate, attractive, and moderately priced lunches.

1. Careful planning is required.
2. A meal pattern should be developed that:
    a. Is simple and easy-to-follow.
    b. Shows the kind and amount of food to serve.
3. The quality of the meal depends upon a manager's knowledge, ability, and judgement.

B. The School Lunch Pattern, formerly referred to as "Type A," has been developed to:

1. Assure a consistently nutritious lunch nationwide.
    a. The nutritional goal of the National School Lunch Program is to provide one-third of the recommended dietary allowances formulated by the Food and Nutrition Board, National Academy of Sciences of the National Research Council.
    b. Allowances are expressed in nutrients and food energy. Nutrition specialists in the U.S. Department of Agriculture have translated these into amounts of food.
    c. Size of serving needs to be specified because "a serving" means different things to different people. The amount of a food served determines whether or not the supply of a nutrient is adequate.
    d. The requirements and recommendations of the school lunch pattern give special emphasis to nutrients that are most likely to be deficient in diets as shown by nationwide surveys and other studies of food consumption.
2. Make menu planning a quick and easy task. Planning:
    a. Provides a flexible framework.
    b. Permits as wide a choice as possible among different foods with similar nutritive value while still assuring a balanced diet.
    c. Allows free choice in selecting additional foods. Thus, menus can be adapted to the student's tastes in specific localities.
    d. Makes the calculating of nutrients unnecessary.
    e. Provides lunches, on a weekly basis, to meet the nutritional goal of the Child Nutrition Programs, and which need to include:
        (1) Specified amounts of foods listed in the pattern.
        (2) Food sources of vitamins A and C and iron.
        (3) Other foods to complement the meals.

C. The School Lunch Pattern establishes these requirements:

1. Lunches will include foods which supply needed nutrients and energy for children of varying age groups.
2. Portions served to children should be adjusted by age/grade groups when feasible. Refer to Chart No. 1, "School Lunch Patterns," in this section.
3. Food categories for Group IV will satisfy all requirements if portion adjustments are not made for various age groups. The categories are:
    a. *Milk*—½ pint fluid milk as a beverage.
    At least one of the following forms of milk must be offered:
        (1) Unflavored lowfat milk.
        (2) Unflavored skim milk.
        (3) Unflavored buttermilk.

b. *Vegetables and fruits*—¾ cup.
Three-fourths cup serving consisting of two or more vegetables or fruits or both. A serving of full-strength vegetable or fruit juice may be counted to meet ½ but not more than ½ of this requirement (½ of ¾ cup = ⅜ cup).

c. *Meat/Meat Alternate*—2 ounces (edible portion as served).

(1) 2 ounces of lean meat, poultry, fish or
(2) 2 ounces of cheese or
(3) 1 egg or
(4) ½ cup cooked dry beans or peas
(5) 4 tablespoons of peanut butter

NOTE: The meat/meat alternate must be served in the main dish or the main dish and one other menu item. It is recommended that in schools not offering choices of meat/meat alternates daily, no one meat alternate or form of meat be served more than three times a week.

d. *Bread or Bread Alternate*—8 servings per week.
At least one serving of whole-grain or enriched bread or bread alternate daily.

(1) Breads which satisfy this requirement are cornbread, biscuits, rolls, and muffins, made with whole-grain or enriched meal or flour.
(2) Bread alternates which also may be used to meet the bread requirements are macaroni, noodles or other whole-grain or enriched pasta products, cooked whole-grain or enriched rice, or other cereal grains such as bulgur or corn grits.
(3) A combination of any of these items may be used; however, in order for an item to be counted toward meeting the bread requirement, it is recommended that such items equal at least ¼ serving.
(4) Only bread or bread alternates that are customarily served as an accompaniment to or an integral part of the main dish may be used to meet the bread requirement. Dessert and snack-type foods such as cakes, cookies, dessert pie crust, and corn chips may not be used to meet this requirement. (Refer to the School Breakfast Program Section I, Part 3, of this handbook and the Oklahoma Menu Planning Book for the Bread and Bread Alternate Chart.)
(5) Minimum weights of a serving of various breads and bread alternates must be met.

D. Recommendations to help assure that all school lunches meet the nutritional goal.

1. A vitamin C vegetable or fruit be served at least two or three times a week.
2. A vitamin A fruit or vegetable be served at least twice a week.
3. Several foods for iron be used each day.
4. Fat, sugar, and salt in menus be maintained at a moderate level.

E. Offer versus serve:

1. The "Offer versus Serve" provision which became effective with the passage of Public Law 95–105 in 1976 was designed to reduce plate waste by allowing senior high school students to select as few as three of the five food items of the reimbursable lunch. The requirement is still effective and *must be implemented*. Schools not observing this regulation are in violation of National School Lunch Program regulations.
2. Public Law 95–166, passed in 1977, gives *junior high* and *middle schools* as defined by the local school district, the *option* of implementing offer versus serve. The Omnibus Reconciliation Act of 1981, gives *elementary schools* the *option* of implementing offer versus serve. If a school decides on this option, appropriate explanations must be made and signs posted. If junior high, middle schools and elementary schools implement the offer versus serve provision, THE STATE AGENCY MUST BE NOTIFIED IN ADVANCE EACH YEAR.
3. To comply with offer versus serve requirements, students must select at least three of the five food components offered in a reimbursable school lunch.

a. The complete lunch consisting of five items must be planned and offered.
b. The five items are meat or meat alternate, milk, bread or bread alternate and two or more servings of fruit and/or vegetables.
c. Students must select at least three *different* items.
d. The lunch must be priced as a unit and the student must pay the full price even if he takes only three of the items.
e. Three extra food (a la carte) items, which are not part of the planned five components lunch, cannot be combined to make a reimbursable lunch.
f. Schools may claim reimbursement on lunches when the above stipulations are met.

F. Student/parent involvement in school food service program.

1. On August 17, 1979, final regulations were signed requiring student and parent involvement in school food service programs. Refer to "Basics of Nutrition" Section I, Part 1, of this handbook.
2. For additional information, contact the State School Lunch Office.

II. PLANNING SCHOOL LUNCHES FOR VARIOUS AGE/GRADE GROUPS

A. Food must be eaten to build and maintain health.

1. School lunches should supply combinations of food in amounts:

a. Children of different ages will eat and enjoy.
b. Appropriate to meet nutritional needs for various age groups.

2. Amounts for age/grade groups are listed in "School Lunch Patterns for Various Age/Grade Groups," Chart No. 1, in this section.

B. Plan to include:

1. Foods that meet the school lunch requirements first; then add other foods to round out lunches or provide appetite appeal.
2. Plain foods that are simply prepared and lightly seasoned; a meat pattie, a vegetable, a canned or fresh fruit. Younger children especially like to recognize the foods they eat and do not always like highly seasoned foods.
3. Moderate-to-small size servings of foods. Larger servings may tend to discourage eating. Use a combination of three servings of vegetables and fruits to meet school lunch requirements.
4. Fewer or smaller servings of starchy foods such as noodles, rice, or spaghetti. These may dull a child's appetite for other foods in the lunch.
5. Foods in a form younger children can manage easily such as bite-size pieces of meat, vegetables sticks, wedges of fresh fruits, or other "finger foods".

C. Children in various age/grade groups (I–IV) may be served more but not less than the foods indicated for each group.

III. A SYSTEM FOR MENU PLANNING

A. From the management standpoint, menu planning is probably the most important phase of school food service operations.

1. The person planning the menu holds the key to ensure:

a. The nutritional adequacy of the lunch.
b. The acceptability of foods by students and teachers,

2. The wise supervisor or manager will:

a. Organize efforts.
b. Capitalize on the imagination and talents of many individuals and student groups.

B. Menus can be planned more easily and efficiently when a systematic method is followed.

1. Organize the place.

SCHOOL LUNCH PATTERNS FOR VARIOUS AGE/GRADE GROUPS

(Chart No. 1)

U.S. Department of Agriculture, National School Lunch Program

USDA recommends, but does not require, that you adjust portions by age/grade group to better meet the food and nutritional needs of children according to their ages. If you adjust portions, Groups I–IV are minimum requirements for the age/grade groups specified. If you do *not* adjust portions, the Group IV portions in the shaded column are the portions to serve all children.

COMPONENTS		MINIMUM QUANTITIES				RECOMMENDED QUANTITIES[2]	
		Preschool		Grades K–3	Grades 4–12[1]	Grades 7–12	
		ages 1-2 (Group I)	ages 3-4 (Group II)	ages 5-8 (Group III)	age 9 & over (Group IV)	age 12 & over (Group V)	SPECIFIC REQUIREMENTS
MEAT OR MEAT ALTERNATE	A serving of one of the following or a combination to give an equivalent quantity:						• Must be served in the main dish or the main dish and one other menu item. • Textured vegetable protein products, cheese alternate products, and enriched macaroni with fortified protein may be used to meet part of the meat/meat alternate requirement. Fact sheets on each of these alternate foods give detailed instructions for use.
	Lean meat, poultry, or fish (edible portion as served)	1 oz	1½ oz	1½ oz	2 oz	3 oz	
	Cheese	1 oz	1½ oz	1½ oz	2 oz	3 oz	
	Large egg(s)	½	3/4	3/4	1	1½	
	Cooked dry beans or peas	¼ cup	⅜ cup	⅜ cup	½ cup	¾ cup	
	Peanut butter	2 Tbsp	3 Tbsp	3 Tbsp	4 Tbsp	6 Tbsp	
VEGETABLE AND/OR FRUIT	Two or more servings of vegetable or fruit or both to total	½ cup	½ cup	½ cup	¾ cup	¾ cup	• No more than one-half of the total requirement may be met with full-strength fruit or vegetable juice. • Cooked dry beans or peas may be used as a meat alternate or as a vegetable but not as both in the same meal.
BREAD OR BREAD ALTERNATE	Servings of bread or bread alternate A serving is: • 1 slice of whole grain or enriched bread • A whole-grain or enriched biscuit, roll, muffin, etc. • ½ cup of cooked whole-grain or enriched rice, macaroni, noodles, whole-grain or enriched pasta products, or other cereal grains such as bulgur or corn grits • A combination of any of the above	5 per week	8 per week	8 per week	8 per week	10 per week	• At least ½ serving of bread or an equivalent quantity of bread alternate for Group I, and 1 serving for Groups II-V, must be served daily. • Enriched macaroni with fortified protein may be used as a meat alternate or as a bread alternate but not as both in the same meal. NOTE: *Food Buying Guide for School Food Service*. PA-1257 (1980) provides the information for the minimum weight of a serving.
MILK	A serving of fluid milk	¾ cup (6 fl oz)	¾ cup (6 fl oz)	½ pint (8 fl oz)	½ pint (8 fl oz)	½ pint (8 fl oz)	At least one of the following forms of milk must be offered: • Unflavored lowfat milk • Unflavored skim milk • Unflavored buttermilk NOTE: This requirement does not prohibit offering other milks, such as whole milk or flavored milk, along with one or more of the above.

---

[1] Group IV is shaded because it is the one meal pattern which will satisfy all requirements if the portion size adjustments are made.

[2] Group V specifies recommended, not required, quantities for students 12 years and older. These students may request smaller portions, but not smaller than those specified in Group IV.

a. Have a special place at school where menus are planned:

    (1) A well arranged office.
    (2) A quiet corner in the kitchen or dining room.

b. Equip the space to be used with:

    (1) Desk or table.
    (2) Chair.
    (3) Bulletin board.
    (4) File Cabinet.
    (5) Bookcase or built-in shelf for reference material.

2. Arrange the reference materials and special aids in an orderly manner.

    a. Label each reference file:

        (1) Previous Menus.
        (2) Inventories of USDA Donated Foods and Purchased Foods.
        (3) USDA—Fact Sheet on Donated Foods.
        (4) Market Report and Price List.
        (5) Menu Suggestions (popular items).
        (6) Newsletters.

    b. Keep all resources at the menu planning center and readily available:

        (1) USDA Menu Planning Guide.
        (2) USDA Food Buying Guide.
        (3) USDA Recipe Card File.
        (4) Menu Forms or Record Books.
        (5) Oklahoma Child Nutrition Handbook.
        (6) Oklahoma Menu Planning Book.
        (7) Oklahoma Inventory Book.

    c. For activities, refer to:

        (1) School calendar.
        (2) School and local papers.

3. Schedule a time to plan:

    a. Plan menus from two weeks to one month ahead of time to be served.
    b. Set aside one day a week or month which will be free from interruption to plan menus.
    c. Allow time to study and review:

        (1) Food inventories.
        (2) Current market and price reports.
        (3) Previous menus used.
        (4) Menu suggestions.

    d. Select recipes.
    e. Plan and check menus.
    f. Determine quantities of food needed and prepare market orders.
    g. Involve interested individuals and student groups. (Student involvement helps sell school lunches. Refer to "Basics of Nutrition" Section I, Part 1 of this handbook for detailed discussion of student involvement.)

4. Plan for the total job. Good menu planning goes beyond the listing of specific foods to be included in daily lunches.

    a. Record the menus planned on a worksheet designed for the purpose and suited to individual needs. (See Roman Numeral V, Cycle Menus in this section.)
    b. Select the specific recipes to be used in preparing the different menu items. Refer to PA–631, August, 1971, Quantity Recipes for School Lunches.

c. Determine the size serving needed to meet requirements.
d. Estimate the number of lunches to be prepared.
e. Adjust the recipes selected to provide the necessary number of servings.
f. Calculate the amounts of food required for the total number of lunches to be served.
g. Calculate the cost of the lunches.
h. If some items or meals are found to be too costly, substitute with less expensive items which fulfill the meal pattern requirement.
i. Prepare purchase orders relative to food inventories.
j. Develop production time and work schedules.
k. Evaluate the menus from the standpoints of meeting school lunch requirements as well as quality and quantity.
l. Evaluate the vitamin A, vitamin C, and iron contribution of the meal utilizing Chart No. 2, in this section, "Classification of Foods, For School Menus."

C. Steps in the menu planning process.

1. Plan the meat and meat alternate main dishes for an entire month.

    a. Include items that are sources of iron as frequently as possible.
    b. If a meat or meat alternate is repeated during the month, vary the vegetables and fruits used.
    c. If choices of meat/meat alternates are not offered daily, no one meat alternate or form of meat should be served more than three times a week.
    d. Follow a plan for providing a good variety of meat and meat alternates in the main dishes. For example, in each four week period, plan to meet the meat and meat alternate requirement by serving:

        (1) Meat; alone or supplemented with cheese, eggs, or peanut butter.
        (2) Poultry, fish, or cheese; alone or supplemented with eggs or peanut butter.
        (3) Dry beans or peas; alone or combined with meat or cheese.
        (4) Any other meat and meat alternate or any combination of meat and meat alternate foods.

    e. Remember that in "Offer versus Serve" situations, it is wise to plan the meat/meat alternate component in only one menu item. Otherwise, if the meat is served in the main dish and in one other menu item, a student would have to select both items.

2. Choose the vegetables and fruits wisely.

    a. Plan vegetables and fruits that "go well" with each main dish.

        (1) Use a different combination of two or more servings of vegetables and fruits each day.
        (2) Include various forms of vegetables and fruits—raw or cooked; fresh, canned, frozen, or dried.
        (3) Full-strength vegetable or fruit juice may be used for not more than ½ of the required ¾ cup.

    b. Include vegetables and fruits that meet recommended nutritional goals.

3. A variety of bread or bread alternates can be selected.

    a. Use an enriched or whole-grain bread which will "go well" with the main dish and other items in each lunch.
    b. Bread may be used:

        (1) As an accompaniment to the lunch.
        (2) In sandwiches.
        (3) As part of the main dish.

    c. Refer to School Breakfast Program Section I, Part 3 of this handbook and/or the Oklahoma Menu Planning Book for the Bread and Bread Alternates Chart.

4. Serve only *fluid* milk which meets requirements.

5. Add other foods as needed.
   a. Include other foods that make a contribution to the meal to help meet the students' needs for calories and other nutrients, especially iron.
   b. Plan a choice of desserts, including a low-calorie item such as fresh fruit if heavy desserts are offered.
   c. Limit the use of sweet desserts, such as cakes and cookies, especially those with frostings.
      (1) Plan to use items which make some nutritional contribution, such as:
         (a) Oatmeal, molasses, or peanut butter cookies.
         (b) Applesauce cake, or carrot cake.
      (2) Plan small portions as a choice if possible.

D. Guidelines for menu planning to consider.

1. Customer needs and preferences:
   a. Choice of popular items are a prime criterion of a good menu.
   b. Cater to regional and personal food preferences.
   c. Survey to determine frequency of repetition of food items and menu acceptance.
2. Eye appeal:
   a. Customers are influenced by the color, form, and texture of foods.
   b. A pleasing combination of colors should be used, with at least one or two colorful foods planned for each meal.
      (1) The natural red, green, and orange colors of fruit and vegetables add tremendous eye appeal.
      (2) Combinations such as beets, radishes, and tomatoes; or peaches, cheese, corn and carrots should not appear together on a serving line.
   c. Plan the way the menu items will be placed on the tray or plate.
3. Variety should be provided in:
   a. Flavor:
      (1) Some bland, some tart.
      (2) Some mild, some spicy, or strong.
   b. Form:
      (1) Some round, some elongated.
      (2) Some mashed, some whole.
      (3) Some diced, some sliced.
      (4) Some large, some small pieces.
   c. Methods of preparation:
      (1) Baked
      (2) Boiled.
      (3) Buttered.
      (4) Creamed.
      (5) Casseroles.
   d. Temperature:
      (1) Cold.
      (2) Hot.
   e. Texture so that the feel in the mouth changes during eating:
      (1) Crisp and firm.
      (2) Soft and creamy.

4. Offer daily:
   - a. Different types of meals (sandwiches, soup and salad bars, ethnic meals, etc.).
   - b. Different forms of food prepared different ways.
5. Avoid repetition of:
   - a. Types of food (strong flavored, etc.).
   - b. Methods of preparation in the same meal.
   - c. Same food in the same meal.
6. Nutritional recommendations:
   - a. Serve a vitamin A vegetable or fruit at least twice a week.
   - b. Serve a vitamin C vegetable or fruit at least two or three times a week.
   - c. Serve foods rich in iron as often as possible.
7. Equipment.
   - a. Capacity and available space.
     - (1) Ovens.
     - (2) Surface units.
     - (3) Steamers.
     - (4) Fryers.
     - (5) Holding and storage.
   - b. Schedule for maximum utilization.
8. Personnel.
   - a. Consider both pre-preparation and preparation time.
   - b. Modify menus so that employee skills can be used to the best advantage.
   - c. The menu aids in balancing the work load from day to day and week to week.
9. Preparation: Aids in equalizing the daily work load.
10. Food cost.
    - a. Plan lunches that are within the food budget.
    - b. Make maximum use of USDA-Donated Foods and foods in plentiful supply.
    - c. Check food inventories and schedule the use of both USDA-Donated and locally purchased food.
    - d. Use standardized recipes and portion control.
    - e. Balance the use of high-cost and low-cost food items within the period of time for which lunches are planned.

IV. GUIDELINES FOR REDUCING SUGAR, FAT, AND SALT IN SCHOOL MEALS

A. Four major areas within quantity food service production that lend themselves to the goal of reducing the amount of sugar, fat, and salt in school meals. (Refer to Chart No. 3, in this section to identify specific foods high in salt and sugar.) These areas are:

1. Menu planning.
2. Food purchasing.
3. Quantity recipes.
4. Techniques of food production.

B. Menu planning

1. Menus are the central point in food service around which all activities revolve and will be the area that will allow the greatest flexibility in reducing sugar, fat, and salt in school meals.
2. Menu items that contribute a large amount of sugar, fat, and/or salt should be replaced with an acceptable alternate.

3. When deciding on alternate menu items to serve, it may be helpful to refer to Agriculture Handbook No. 456—"Nutritive Value of American Foods In Common Units."
    a. This publication is a basis for data on nutrients in frequently used measures of approximately 2,500 foods.
    b. It does not provide any value for sugar in foods. It does list the grams of fat and milligrams of sodium in foods.
4. In revising menus, keep in mind the foods and combinations of foods most acceptable to children. Some helpful suggestions when revising menus include:
    a. If desserts are a part of the school lunch, it is not necessary to eliminate them entirely. Instead, replace desserts high in sugar, fat, and salt with fresh fruits.
    b. Serve unsweetened cooked fruit hot for fullest flavor. Bake apples without sugar or fill centers of cored apples with raisins.
    c. Replace canned fruits packed in heavy syrup with fresh fruits or canned fruits packed in natural juices, water pack, or light syrup.
    d. Serve dried fruits unsweetened or use to sweeten other cooked foods, such as rice pudding.
    e. Limit the number of days per week chocolate milk is offered.
    f. Replace fruit drinks with full strength fruit juices.

C. Food purchasing.

1. The amount of sugar, fat, and salt in food products can be minimized through careful selections of foods when purchased.
    a. Compare the ingredients listed on the labels of different brands of a specific product.
        (1) Note the order in which ingredients are listed.
        (2) Ingredients must be listed in decreasing order of predominance by weight. This provides an indication of the relative amounts of salt (sodium), sugar, and fat between one brand and another.
    b. Nutrition labeling is voluntary for most foods and is not required on food products shipped in bulk for use solely in the manufacture of other foods.
2. Review food purchase specifications for areas to reduce the levels of sugar, fat, and salt in various food items such as:
    a. The type of liquid (heavy syrup vs. natural juices or water pack) used for canned fruits.
    b. The percent of fat in ground beef.
3. When purchasing milk for cooking or baking purposes, select skim or lowfat fluid milk or non-fat dry milk.

D. Quantity recipes.

1. Reducing the amount of sugar, fat, and salt in school lunches by altering quantity recipes must be approached with caution.
2. In view of all of the functions of sugar, fat, and salt in foods, substituting or reducing specified amounts of these ingredients in recipes should be done with care.
3. Eliminating a portion of a recipe such as gravy from a meat entree or frosting from cakes or cookies can be done without mishap. However, drastically reducing the amount of sugar in a cake or fat in biscuits may result in an unsatisfactory product.
4. Although reducing the amounts of sugar, fat, and salt in recipes must be done carefully, it is not an impossible task. Review the recipe file and select those that are suitable for reduction.
5. Only one alteration to the recipe should be done at a time.
6. Reduce the amount of the ingredient (sugar, fat or salt) 5% to 10% each time. Test the revised recipe and evaluate it for feasibility and acceptability.

Classification of Foods—(Chart No. 2)

Meat and Meat Alternate

- Cheese
  - Cheddar
  - Cottage
  - Swiss
- Dry beans
- Dry peas
- Eggs — dried, whole
  - frozen, whole
  - shell
- Fish and shellfish
- Meat — canned, dried, fresh and frozen
  - Beef
  - Lamb
  - Pork
  - Veal
  - Variety meats
  - Bologna
  - Frankfurters
  - Liver[5] and
    - other organ meats
  - Knockwurst
- Peanut butter
- Poultry — canned, fresh and frozen
  - Chicken
  - Turkey
- Cheese alternate (when mixed in a cooked product with natural or processed cheese)
- Protein-fortified, enriched macaroni (when mixed with meat, poultry, fish, or cheese)
- Textured vegetable protein (when mixed with meat, poultry, or fish)

Vegetables and Fruits

Include a VITAMIN A vegetable or fruit at least twice a week[1]

¼-cup serving
(about 1500 or more International units of vit. A)

- Beet greens
- Carrots
- Chard, swiss
- Chili peppers, red[3]
- Collards[3]
- Cress, garden[3]
- Dandelion greens[3]
- Kale[3]
- Mangoes[3]
- Mixed Vegetables (frozen)
- Mustard greens[3]
- Peas and carrots (canned or frozen)
- Peppers, sweet red[3]
- Pumpkin
- Spinach[3]
- Squash, winter (acorn, butternut, Hubbard)
- Sweet potatoes[3]
- Turnip greens[3]

¼-cup serving
(about 750-1500 International units of vit. A)

- Apricots
- Broccoli[3]
- Cantaloupe[3]
- Chicory greens
- Papayas[3]
- Purple plums (canned)

½-cup serving
(about 750-1500 International units of vit. A)

- Asparagus, green[3]
- Cherries, red sour
- Chili peppers, green (fresh)[3]
- Endive, curly
- Escarole
- Nectarines
- Peaches (except canned)
- Prunes
- Tomatoes[3]
- Tomato juice or reconstituted paste or puree[3]

Include a VITAMIN C vegetable or fruit at least two or three times a week[2]

¼-cup serving
(about 25 milligrams or more of vit. C)

- Acerola
- Broccoli[4]
- Brussels sprouts
- Chili peppers, red[4] and green
- Guavas
- Orange juice
- Oranges
- Papayas[4]
- Peppers, sweet red[4] and green

¼-cup serving
(about 15-25 milligrams of vit. C)

- Cauliflower
- Collards[4]
- Cress, garden[4]
- Grapefruit
- Grapefruit juice
- Grapefruit-orange juice
- Kale[4]
- Kohlrabi
- Kumquats
- Mangoes[4]
- Mustard greens[4]
- Pineapple juice (canned — vitamin C restored)
- Strawberries
- Tangerine juice
- Tangerines

¼-cup serving
(about 8-15 milligrams of vit. C)

- Asparagus
- Cabbage
- Cantaloupe[4]
- Dandelion greens[4]
- Honeydew melon
- Okra
- Potatoes (baked, boiled, or steamed)
- Potatoes (reconstituted instant mashed — vitamin C restored)
- Raspberries, red
- Rutabagas
- Sauerkraut
- Spinach[4]
- Sweet potatoes[4] (except those canned in syrup)
- Tangelos
- Tomatoes
- Tomato juice or reconstituted paste or puree
- Turnip greens
- Turnips

Include these vegetables and fruits as needed

- Apples
- Applesauce
- Avocados
- Bananas
- Beans, green or wax
- Beans, lima, green
- Bean sprouts
- Beets
- Berries (black, blue, etc.)
- Celery
- Chinese cabbage
- Corn
- Cranberries
- Cranberry sauce
- Cucumbers
- Dates
- Eggplant
- Figs
- Fruit cocktail
- Fruits for salads
- Grapes
- Lettuce
- Mixed vegetables (canned)
- Mushrooms
- Olives
- Onions
- Parsley
- Parsnips
- Peaches (canned)
- Pears
- Peas and carrots (canned)
  - Cowpeas, immature seed
- Pimientos
- Pineapple
- Plums
- Potatoes (mashed, fried, etc.)
- Radishes
- Raisins
- Rhubarb
- Squash, summer
- Watercress
- Watermelon
- Fruit juices (apple, grape, pineapple, etc.)

---

[1] **Vitamin A Vegetables and Fruits.** The vegetables and fruits listed below will supply at least 750 International Units of vitamin A per 1/4- or 1/2-cup serving. When these vegetables and fruits are served at least twice a week in recommended amounts along with a variety of additional vegetables and fruits used to meet the vegetable and fruit requirement, the vitamin A content of the lunch will generally meet one-third of the Recommended Dietary Allowance for each age/grade group.

[2] **Vitamin C Vegetables and Fruits.** The vegetables and fruits listed below will supply about 8 milligrams or more vitamin C (ascorbic acid) per 1/4-cup serving. When these vegetables and fruits are served at least two or three times a week in recommended amounts along with a variety of additional vegetables and fruits to meet the vegetable and fruit requirement, the vitamin C content of the lunch will generally meet one-third of the Recommended Dietary Allowance for each age/grade group.

(Chart No. 2 Continued)

Bread and Bread Alternate
(enriched or whole-grain)

Group 1 *(0.9 oz or 25 gm)*
- Bagels
- Biscuits
- Boston brown bread
- Buns (all types)
- Coffee cake (breakfast only)
- Cornbread
- Doughnuts (breakfast only)
- English muffins
- French or Vienna
- "Fry" bread
- Italian bread
- Muffins
- Pretzels (soft)
- Pumpernickel
- Raisin bread
- Rolls
- Rye bread
- Stuffing (bread)
- Sweet rolls (breakfast only)
- Syrian bread (flat)
- White bread
- Whole wheat bread

Group 2 *(0.7 oz or 20 gm)*
- Bread sticks (dry)
- Graham Crackers
- Melba toast
- "Pilot" bread
- Rye wafers
- Saltine crackers
- Soda crackers
- Taco shells
- Zwieback

Group 3 *(1.1 oz or 30 gm)*
- Dumplings
- Hush puppies
- Meat pie crust
- Meat turnover crust
- Pancakes
- Pizza crust
- Popovers
- Sopaipillas
- Spoonbread
- Tortillas
- Waffles

Group 4 *(½-cup cooked)*
- Bulgur
- Corn grits
- Dry cereals (breakfast only — 3/4 cup or 1 oz)
- Lasagna noodles
- Macaroni
- Noodles (egg)
- Rice
- Spaghetti
- Farina

Milk

- **Milk, fluid**
- Cultured buttermilk
- Flavored milk
- Lowfat
- Skim
- Whole

Foods for Iron[6]

Meat and Meat Alternate
- Dry beans and peas
- Eggs
- Meats in general especially liver and other organ meats
- Peanut butter
- Shellfish
- Turkey

Vegetables and Fruits
- Apricots (canned)
- Asparagus (canned)
- Beans — green, wax, lima (canned)
- Bean sprouts
- Beets (canned)
- Broccoli
- Brussels sprouts
- Cherries (canned)
- Dried fruits — apples, apricots, dates, figs, peaches, prunes, raisins
- Grapes (canned)
- Parsnips
- Peas, green
- Potatoes (canned)
- Sauerkraut (canned)
- Squash (winter)
- Sweet potatoes
- Tomatoes (canned)
- Tomato juice, paste, puree, sauce
- Vegetables: Dark green leafy — beet greens, chard, collards, kale, mustard greens, spinach, turnip greens
- Vegetable juice (canned)

Bread and Bread Alternates
- All enriched or whole-grain bread and bread alternates

---

[3] See listing of vitamin C foods.

[4] See listing of vitamin A foods.

[5] One ounce provides more than 1500 International Units of vitamin A.

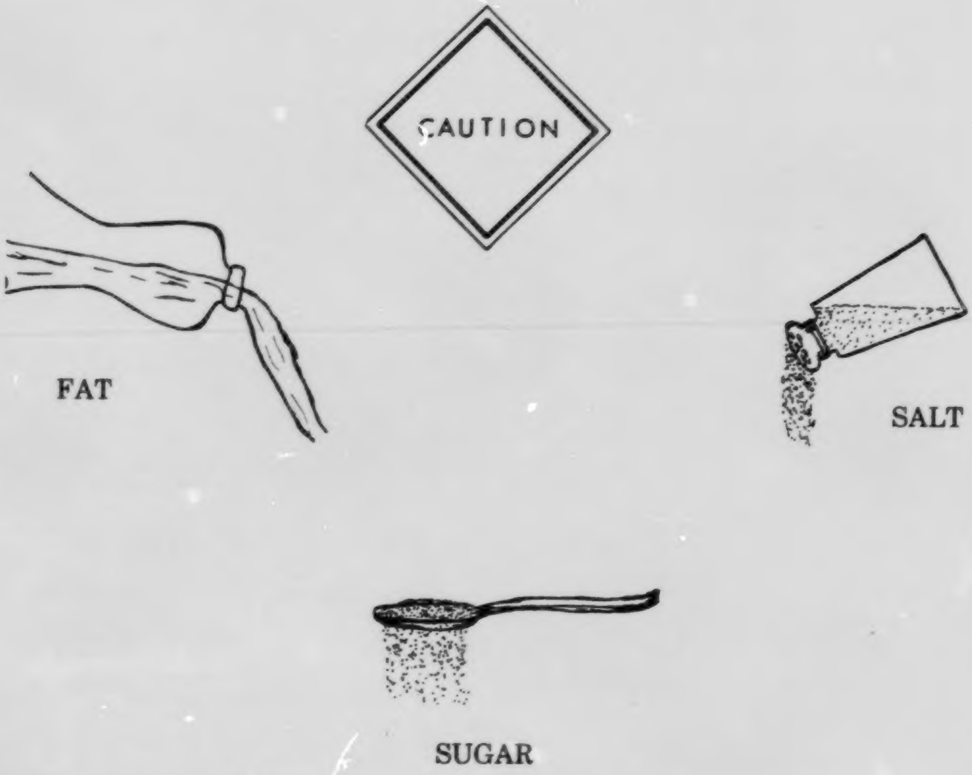
[6] **Foods for Iron.** Because of the way iron is distributed among many foods (meats, vegetables and fruits, and breads), it is recommended that each lunch include several foods that are worthwhile sources of iron in sufficient quantities for the age/grade group served. The list of foods for iron includes meat and meat alternate foods that supply at least 1.0 milligram of iron per 2-ounce serving of meat or alternate, breads and other foods that supply 0.6 milligram of iron per serving, and fruits and vegetables that provide at least 0.3 milligram of iron per 1/4-cup serving.

The extent the body can make use of the iron in foods depends not only on the amount of iron in foods, but on the source of iron—whether it comes from a meat or a nonmeat source—and on the other foods that are eaten in the meal. The body can make better use of the iron in these foods if they are eaten in the same meal as a good source of vitamin C or along with meat.

7. In reviewing recipes, also give consideration to the types of ingredients that may be used. For example:
    a. In preparing cream soups, use a 50–50 ratio of skim or lowfat milk and water instead of milk or milk and cream only.
    b. Use skim or lowfat milk or non-fat dry milk when milk is used in a recipe.
    c. Use canned fruit packed in water, natural juices, or light syrup.

E. Techniques of food production.
    1. Instruct food service employees to follow recipes *exactly*. Not only which ingredients are to be used but the exact amounts for those ingredients. Many fine cooks add their personal touch to a recipe by seasoning products with more salt than required in the recipe, adding an extra stick of butter or bacon fat for flavor or sweetening vegetables with just a bit of sugar. Small amounts added by each cook may have a significant effect on the total amount of sugar, fat, and salt in a meal.
    2. Whenever possible, bake or oven-fry such foods as chicken, fish, French fries, etc., instead of deep fat frying.
    3. Use an oil spray or pan liners instead of shortening to prevent foods from sticking to surfaces of grills and pans.
    4. Maintain portion control for all food items. This is especially important in activities such as buttering breads.

Moderating Fat, Sugar, and Salt



FOODS CONTAINING RELATIVELY HIGH LEVELS OF FAT, SUGAR, AND SALT—"MAJOR SOURCES"—(Chart No. 3)

This is not a complete list, but names items commonly used in school meals. The amount of fat, sugar, and salt provided by items in the starred (*) categories can vary greatly depending on the ingredients. The examples listed under these categories are those food items which are generally relatively high in fat, sugar, or salt compared to some other items in these categories.

FAT

- Chocolate milk
- Whole milk
- Milkshakes
- Ice cream
- Sour cream
- Cream cheese
- Cheese (made from whole milk) e.g.:
  - Cheddar
  - Swiss
  - American
- Puddings and cream pies (made with whole milk or cream)
- Cream soups (made with whole milk or cream)
- Gravies
- Mayonnaise
- Commercial salad dressings
- Nuts
- Coconut
- Peanut butter
- Bacon
- Untrimmed, highly marbled meats
- Processed meats, e.g.:
  - Sausage
  - Frankfurters
  - Bologna
  - Corned beef
- Processed breaded meat items
- Fish packed in oil, e.g.:
  - Tuna
- Rich pastries
- Cakes, with frosting
  - Chocolate cake
- *Cookies, e.g.:
  - Butter
  - Macaroons
  - Peanut butter
  - Chocolate fudge
- Snack items, e.g.:
  - Potato chips
  - Corn chips
- Olives
- Deep-fat or pan-fried foods

SUGAR

- Chocolate milk
- Milkshakes
- Flavored fruit drinks or fruit ades
- Flavored gelatin
- Jams or jellies
- Sweet sauces, toppings, syrups
- Sherbet
- *Pies or cobblers
  - Canned fruit fillings
  - Lemon meringue
- *Cakes with frosting
  - Chocolate cake
- *Cookies, e.g.:
  - Chocolate fudge
- Cream or jelly filled
- *Sweet rolls, e.g.:
  - Sticky buns
- Canned fruits in heavy syrup
- Confections, e.g.:
  - Chocolate pieces
  - Marshallows
- Sweetened coconut
- Flavored puddings
- Sweet pickles

SALT

- Canned or dehydrated soups
- Bouillon cubes
- Gravies
- Barbecue sauce
- Condiments, e.g.:
  - Catsup
  - Prepared mustard
  - Worcestershire sauce
  - Horseradish
  - Soy sauce
- Foods prepared in brine, e.g.:
  - Pickles
  - Olives
  - Sauerkraut
- Commercial salad dressings
- Bacon
- Ham
- Processed meats, e.g.:
  - Frankfurters
  - Bologna
  - Canned meats
  - Sausage
  - Corned beef
  - Dried chipped beef
- *Commercially prepared ready-to-serve items, e.g.:
  - Canned pork and beans
  - Meat entrees with tomato sauce or gravies
- Salted nuts and peanut butter
- Salted crackers
- Salted snacks, e.g.:
  - Potato chips
  - Corn chips
- Processed cheeses

V. CYCLE MENUS: AN EFFECTIVE MANAGEMENT TOOL

A. Advance planning is the best safeguard against lack of variety in menus and loss of planning time.

1. Avoids duplication.
   - a. A "Six Week Cycle Menu Planning Worksheet" (Sample No. 1), found in this section, permits viewing the entire cycle.
   - b. Transfer to the Menu Planning Book and figure quantities.
   - c. List recipe numbers, size of servings, and any other notation desired.
2. Allows time to check each menu for variety.
3. Provides opportunity to substitute menu items if the same dishes are used too frequently.
4. Provides a tool to help locate items which have been "over used" in the cycle. (See "Frequency Of Items Served Worksheet," Sample No. 2, in this section.)
5. Permits the opportunity to evaluate each menu in terms of requirements and recommendations.

B. Rotate planned menus according to a definite pattern. (Refer to Chart No. 4 in this section.)

1. Using different combinations of food and rotating days they are served.
2. Providing greater variety with the same food.

C. Streamline planning functions.

1. Eliminates planning a completely new set of menus each week or month.
2. More time is available for supervision and preparation. Recipes and procedures can be standardized and improved through repeated use.
3. Better purchasing can be done by more effective bid buying.
4. Food and labor costs can be more predictable by eliminating unpopular foods and stabilizing quantity and portion control.

D. Blueprint for purchasing

1. Plan menu with knowledge of what is available on the market and what can be afforded.
2. Purchases can be anticipated before need for product arises.
3. Is an aid to preparing a market order.
4. Can more accurately forecast foods needed over an extended period of time which is important in preparing and honoring bids.

E. Facilitates standardization of preparation and improvements of skills among personnel:

1. Enables one employee to teach another.
2. Improves techniques of work simplification.
3. Aids in predicting quantities needed for anticipated participation.
4. Allows for subsequent menu revisions considered necessary because of:
   - a. Too many last minute preparations.
   - b. Too many items on the serving counter.
   - c. Too many items to serve on the plate efficiently or attractively.

F. Permits staffing and work schedules to be assigned.

1. Work schedules can be reused with slight changes.
2. Job assignments for each employee should be made by the manager.

G. Review frequently to make adjustments.

1. Replace food items not available.
2. Observe holidays and special occasions.
3. Introduce new foods and try new recipes.
4. Take advantage of a good buy or seasonal food.

5. Use leftovers.
6. Evaluate food acceptability and plate waste.
7. Use available USDA Donated Foods.
8. Substitute a more acceptable method of preparation.

VI. SCHOOL FOOD SERVICE PROGRAMS MUST SATISFY CUSTOMERS TO INCREASE PARTICIPATION

A. The School Food Service Program, like the commercial food establishments, must satisfy its customers.

B. Students, the customers, want to feel comfortable in their school cafeteria.

1. The school food service personnel can help students anticipate the meal period rather than just tolerate it.
2. Student participation has been known to increase when:
   a. They have had a part in planning the arrangement of the room and service of the food.
   b. Cafeterias are renamed to emulate commercial restaurants.
   c. Special menus are featured monthly.
   d. Special privileges are provided, such as:
      (1) Making reservations for special groups or meetings.
      (2) Providing tablecloths for special days, functions, or groups.
   e. Box lunches are provided that can be eaten inside or outside of the cafeteria.

6 WEEKS CYCLE MENU CHARTED AS TO WEEK OF YEAR TO BE SERVED—(Chart No. 4)

Menu No.						
1-2-3-4-5	Sept. 4	Oct. 16	Nov. 27	Jan. 15	Feb. 26	April 9
6-7-8-9-10	Sept. 11	Oct. 23	Dec. 4	Jan. 22	Mar. 5	April 16
11-12-13-14-15	Sept. 18	Oct. 30	Dec. 11	Jan. 29	Mar. 12	April 23
16-17-18-19-20	Sept. 25	Nov. 6	Dec. 18	Feb. 5	Mar. 19	April 30
21-22-23-24-25	Oct. 2	Nov. 13	Jan. 1	Feb. 12	Mar. 26	May 7
26-27-28-29-30	Oct. 9	Nov. 20	Jan. 8	Feb. 19	April 2	May 14

NOTE: The chart above provides an example of scheduling a cycle throughout the year. Seasonal changes will need to be considered.

SCHOOL LUNCH BUNCH

VII. CHOICE MENUS

A. Choice menus within The School Lunch Patterns are useful in increasing participation levels.

  1. Choice of entrees and/or vegetables and fruits.

    a. Choice of pizza or hamburger.
    b. Choice of buttered corn or French fries.
    c. To either selection add:

      (1) Crisp tossed salad.
      (2) Milk.
      (3) Citrus fruit cup.

  2. Choice of two complete meals:

Line I	*Line II*
Beef & Vegetable Soup	Creamed Chicken on Rice
Grilled Cheese Sandwich	Green Beans—Tossed Salad
½ Orange	Rolls
Milk	Milk

  3. Choice between a regular School Lunch Pattern:

    a. Salad bar.
    b. Bag lunch.
    c. Cold Plate.
    d. Soup and sandwich.

B. Breakfast choice menus may also increase participation.

  1. Choice of juice or fruit cup.
  2. To either choice add:

    a. Egg and bacon.
    b. Whole wheat toast.
    c. Milk.

NOTE: See "Six Weeks Cycle Menu Planning Worksheets" in this section (Samples No. 3 and 4.)

VIII. VARIATIONS OF THE SCHOOL MEAL PATTERN

A. The reimbursable meal pattern salad or "streamliner" lunch:

  1. Is planned primarily for those who wish to have a meal low in calories.
  2. May be called a "Low Calorie Plate" or "Dieters Special," etc.
  3. Should consist of low-calorie foods, without sacrifice of nutritional standards.
  4. Should be are planned around a basic pattern consisting of:

    a. A meat/meat alternate salad.
    b. Fruit/vegetable relishes or salad.
    c. Crisp buttered toast, hot bread, or crackers.
    d. Fruit dessert.
    e. Milk.

  5. Should use vitamin C-rich fruits or vegetables several times a week.
  6. Should be kept refrigerated until assembled for serving.
  7. Should be coordinated with the regular meal pattern lunch to keep the number of items to be prepared to a minimum.

B. Salad bars.

  1. May provide a lighter lunch that suits the customer's needs more than the traditional meat and potato meal.

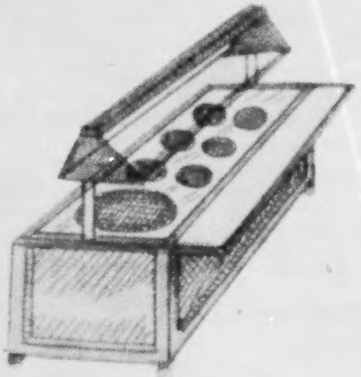
2. The following example of a salad-bar system in student dining areas, designed for customer self service, is similar to one in Fairfax County, Virginia.

   a. The salad lunch MUST OFFER all five components of the reimbursable lunch.
   b. Price: ______ adults; ______ students (through once).
   c. Offer Daily: lettuce mix in large "punch bowl," croutons, sliced onions.
   d. Offer at least three of the following daily in a variety of colors, shapes, and textures.

      (1) Bean sprouts
      (2) Chick peas
      (3) Cauliflower flowerettes
      (4) Sauerkraut
      (5) Radishes, slices or whole
      (6) Julienne beets
      (7) Carrots, sliced or grated
      (8) Tomatoes, cherry or wedges
      (9) Green pepper, rings or slices
      (10) Cucumber slices
      (11) Broccoli flowerettes
      (12) Celery, chunks or chopped
      (13) Spinach leaves
      (14) Three-bean salad
      (15) Green peas with onion
      (16) Beans (green, wax or kidney)
      (17) Peanut granules
      (18) Peanuts
      (19) Pickle chips, dill or sweet

   e. Offer one of the following daily:

      (1) Peaches, diced or sliced
      (2) Pears, diced or sliced
      (3) Pineapple
      (4) Orange wedges
      (5) Apple slices
      (6) Melon pieces
      (7) Fruit cup
      (8) Grapes



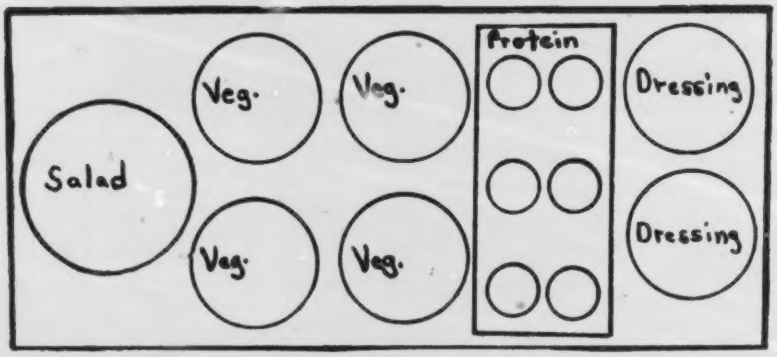
   f. Offer at least two of the following daily:

      (1) Cheese, grated or cubed
      (2) Eggs, sliced or wedged
      (3) Cottage cheese
      (4) Chicken, tuna, or egg salad
      (5) Julienne ham
      (6) Julienne roast, beef
      (7) Julienne salami
      (8) Julienne turkey

   g. Offer two of the following dressings daily:

      (1) Thousand island
      (2) Oil and vinegar
      (3) French
      (4) Ranch
      (5) Green goddess
      (6) Creamy Italian

3. Suggested salad-bar setup:



a. Customer receives salad bowl from cashier after payment is received.
b. All salad bars are required to have a sneeze guard. There are a variety on the market to meet individual needs. The school will have to decide the kind best suited for each program. (Refer to the School Food Service Planning and Equipping Section IX of this handbook.)

C. The school lunch menu pattern box or bag:

1. Appeals to young people who wish to pick up a quick lunch and be able to participate in other activities during the lunch period.
2. May be used for both elementary school pupils and high school students on field trips.
3. Is usually sold at some point away from the main food service line for speed of service.
4. Requires careful planning to maintain nutritional standards.
5. Basically consists of:
   a. Meat/meat alternate cold sandwich.
   b. Salads or raw vegetables.
   c. Fruits, cookies or desserts.
   d. Milk
6. Special preparation to consider.
   a. Pack sandwiches and/or raw vegetables in plastic bag.
   b. May use paper cups with lids for salads and desserts. (It is desirable to include only one of these for each meal.)
   c. May be served on paper plates instead of packed in a box or bag.
7. Evaluate the increase in cost of paper items in relation to participation and income.

D. Coordination of menus for varied lunches: A sample menu offering a hot plate lunch, a salad lunch, and a bag lunch, coordinated to minimize extra preparation, is shown below:

Hot Plate Lunch	*Bag Lunch*
Savory Stuffed *Ham* Loaf Parsley Buttered Potato *Green Bean Salad* with *Carrot Curls* *Whole Wheat Roll* Coconut and *Orange Slices* Milk	*Ham* and Cheese Sandwiches Buttered *Whole Wheat* Bread *Green Bean Salad* with *Carrot Curls* *Fresh Orange* Crisp Cookie Milk

Salad Lunch
Cottage Cheese with Pineapple Chunks on lettuce Leaf *Green Bean Salad* with *Carrot Curls* and Celery Sticks *Whole Wheat Toast* Triangles Coconut and *Orange Slices* Milk

E. Work closely with students when implementing choice menus.

1. Ask for ideas about the need for and type of choice menu pattern.
2. Prepare, in total, only the number of reimbursable meals needed.

IX. EVALUATION OF THE MENU

A. Examine, with the customers in mind, the details of the completed menus.

1. Analyze them from every point of view.
2. Ask many critical questions after they have been served.
   a. How well was the job done?

        - (1) Were the menus appealing?
        - (2) Do menus need improving?
        - (3) Were menus flexible enough to allow for changes and adjustments when indicated?
    - b. Have goals been met?
        - (1) Are goals clear?
        - (2) Have standards been set?
        - (3) Is evaluation continuous?

B. Did the plan include variety?

1. Do not use the same food on the same day each week.
2. Plan different forms of foods prepared in different ways. Do not use two foods prepared in the same way in the same lunch.
3. Do not use food prepared in the same way each time they are served.
    - a. For example, vegetables can be served:
        - (1) Raw or cooked.
        - (2) Peeled or unpeeled.
        - (3) Buttered, creamed, or scalloped.
        - (4) With different sauces or seasonings.
    - b. Include food combinations most acceptable to children.

C. Were contrasts planned:

1. To include at least one cold food with a hot lunch and a hot food with a cold lunch?
2. To use some crisp, firm foods with soft, creamy ones?
3. To use a combination of mild with strong flavored foods?
4. To use a pleasing combination of different sizes and shapes of foods?

D. Was eye appeal considered?

1. Combinations of colors that blend well should be used.
2. Use at least one or two colorful foods in each menu.
3. Use colorful foods in combination with those of little or no color.
4. Use garnishes to brighten foods naturally lacking in color.
5. Plan the placement of menu items on the tray or plate.

E. Were food habits considered?

1. Plan for the regional, cultural, and personal food preferences of children.
2. Include "new" or less popular foods with well-liked or familiar ones.

F. Was plate waste considered?

1. Plate waste represents a financial loss to the child and more importantly, a nutritional loss.
    - a. Waste represents a loss to the school in money spent for food and labor.
    - b. More than a gallon of plate waste per 100 meals is usually excessive.
    - c. Reasons for plate waste should be determined.
2. There should be a cooperative effort on the part of the principal, superintendent, teacher, student, parents, and cafeteria personnel to find the cause and reduce plate waste.
3. Consider the following in determining the causes of plate waste:
    - a. Check returning plates and garbage cans to see what was not eaten.
    - b. Were foods of good quality used to prepare the dish?
    - c. Was the plate colorfully and attractively served without foods running together?
    - d. Was the food well prepared, well seasoned, and of good consistency?
    - e. Were the hot foods served hot and the cold foods served cold?

f. Were the portions served adjusted to the child's age?
g. Are the children prepared in the classroom to accept new and unfamiliar foods? Tasting parties in the classroom or samples served as extras in the cafeteria prior to including on the menu can change attitudes.
h. If a new food is being served, was a dish included in the menu that is especially popular with the children?
i. Was the food easy to eat; not difficult to cut or handle?
j. Did the children have sufficient time to eat?
k. Do adults eat with the children? This provides an excellent opportunity for nutrition education.
l. Is the cafeteria a clean and attractive place in which to eat?
m. Has the clean plate club been introduced? Properly handled, this has been very effective.
n. Are extra items such as ice cream, cookies, etc., eliminated from sale in the cafeteria?
o. Has a survey of food preference been taken?

4. A notation of plate waste should be recorded in the menu planning book for future reference.

G. Were special occasions remembered? Plan lunches which have a festive air for:

1. School and national holidays.
2. Birthdays.
3. Visiting days.
4. National School Lunch Week.

H. Were climate or seasonal variations considered? Plan lunches that include more:

1. Hot foods in cold weather.
2. Cold foods and salads in warm weather.

I. Was seasonal availability of foods included in the plan? Serve fresh foods when they are in plentiful supply and at the peak of quality.

J. Was consideration given to all aspects of cost?

1. Food Cost: Plan menus that are within the food budget.
2. Facilities: Plan lunches that can be prepared and served with the facilities and equipment available.
3. Personnel: Plan lunches that can be prepared by the employees in the time available.

K. "Check List for Menu Evaluation" should be used before and after serving menus. (Sample No. 5 in this section.)

X. COMMON ERRORS IN MENU PLANNING

A. Type of food.

1. Too many starchy foods.
2. Unfamiliar item.

B. Color.

1. Too many foods the same color.
2. Lack of color.

C. Flavor.

1. All bland flavors.
2. Too many strong, distinctive, sweet or sour flavors.

D. Texture.

1. Too many mixtures.
2. Too many soft foods.

E. Form: size and shape.

   1. Too many small pieces (especially the same size and shape pieces, such as, peas and corn).
   2. Too many similar shapes, such as round (meat balls, round tomatoes or small whole potatoes).

F. Method of preparation.

   1. Too many foods prepared the same, such as fried or creamed.
   2. Too many foods planned for the same equipment at the same time.

XI. REASONS FOR POOR ACCEPTANCE OF MENUS

A. Unfamiliar foods.
B. Improperly cooked.
C. Disagreeable odor.
D. Difficult to eat.
E. Lukewarm food.

XII. THE OKLAHOMA MENU PLANNING BOOK

A. The Oklahoma Menu Planning Book is provided as a convenient, systematic management tool for preplanning menus, helping to determine amounts of food to purchase and prepare. The menu planning book is also used daily to document:

   1. Number of servings planned and served.
   2. Menus.
   3. Serving sizes.
   4. Cost for management purposes.
   5. Quantities of food prepared.
   6. Servings per purchased unit.
   7. Number of leftover servings.
   8. Plate waste comments may include:
      a. Average or excessive.
      b. Food items most prominent in garbage.
      c. Too many items to serve efficiently.
      d. Too many last minute preparations.

B. The completed records provide:

   1. Written evidence of compliance with quantity regulations.
   2. A management tool.
   3. A permanent source document.

6 WEEKS CYCLE MENU PLANNING WORKSHEET (Sample No. 1)

No.	Day	No.	Meat/Meat Alternate	Vegetable/Fruit	Bread/Bread Alternate	Milk
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

FREQUENCY OF ITEMS SERVED IN 6 WEEKS CYCLE (Sample No. 2)

Weeks:	1	2	3	4	5	6	Weeks:	1	2	3	4	5	6
Meat/Meat Alternates							**Vegetables**						
							Salads						

Use initials to show day of week used: M T W Th F

FREQUENCY OF ITEMS SERVED IN 6 WEEKS CYCLE (Sample No. 2 Continued)

Weeks:	1	2	3	4	5	6	Weeks:	1	2	3	4	5	6
Bread/Bread Alternate							**Fruits**						
							Desserts						

Use initials to show day of week used: M T W Th F

6 WEEKS CYCLE MENU PLANNING WORKSHEET (Sample No. 3)

2 CHOICES

Menu No.	Day	Group No.	Meat/Meat Alternate	Vegetable/Fruit	Bread/Bread Alternate	Milk
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

6 WEEKS CYCLE MENU PLANNING WORKSHEET (Sample No. 3 Continued)

2 CHOICES

Menu No.	Day	Group No.	Meat/Meat Alternate	Vegetable/Fruit	Bread/Bread Alternate	Milk
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

6 WEEKS CYCLE MENU PLANNING WORKSHEET (Sample No. 4)

3 CHOICES

Menu No.	Day	Group No.	Meat/Meat Alternate	Vegetable/Fruit	Bread/Bread Alternate	Milk
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

6 WEEKS CYCLE MENU PLANNING WORKSHEET (Sample No. 4 Continued)

3 CHOICES

Menu No.	Day	Group No.	Meat/Meat Alternate	Vegetable/Fruit	Bread/Bread Alternate	Milk
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

6 WEEKS CYCLE MENU PLANNING WORKSHEET (Sample No. 4 Continued)

3 CHOICES

Menu No.	Day	Group No.	Meat/Meat Alternate	Vegetable/Fruit	Bread/Bread Alternate	Milk
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

CHECK-LIST FOR MENU EVALUATION (Sample No. 5)

CYCLE: ____________________ WEEK: ____________________ DATES____________

Directions:
1. Check planned menu before service.
2. Complete after service.
3. Make comments for all items checked "no". Incorporate changes in next cycle.

CRITERIA	YES	NO	COMMENTS-CHANGES
1. NUTRITION (check menu before serving)			
a. Meets Meal Pattern requirements?			
b. Vitamin A foods included?			
c. Vitamin C foods included?			
d. Adequate portions planned?			
e. Weekly bread requirements met?			
f. Additional energy sources included?			
2. CUSTOMER SATISFACTION (complete after service)			
a. Variations in serving sizes?			
b. Variations in color?			
c. Variations in texture?			
d. Different sizes and shapes?			
e. Pleasing flavor combinations?			
f. Hot and cold foods served?			
g. Seasonal foods included?			
h. Special events, if any, considered?			
i. Children's food habits considered?			
j. Adult's food habits considered?			
k. Suitable for age served?			
3. MANAGEMENT AND PERSONNEL SATISFACTION (check after serving)			
a. Preparation time adequate?			
b. Employee skill adequate?			
c. Sufficient number of employees?			
d. Employee work load evenly distributed?			
e. Right type of preparation equipment?			
f. Right type of service utensils?			
g. Donated foods included?			
h. Items on inventory included?			
i. Food cost within budget?			
j. New protein recommendation considered?			
k. Labor cost within budget?			
l. Food quality good at point of service?			
m. Service time adequate?			
n. Standardized recipes available?			
o. Work schedules suitable?			

SECTION I
(Part 3)
SCHOOL BREAKFAST PROGRAM

Page

I. Importance of Breakfast 53
II. School Breakfast Program 54
III. Requirements for the School Breakfast Program 55
  Bread and Bread Alternates for School Lunch (Sample No. 1) 56
  Breakfast Program—Additional Bread and Bread Alternates (Sample No. 2) 57
IV. Nutrients in the School Breakfast 57
V. Breakfast Menus 58
VI. Breakfast Menu Evaluation 58
VII. Survey Forms for Breakfast 58
  Three Weeks Cycle Menus for Breakfast (Sample No. 3) 59
  Three Weeks Cycle Menus for Breakfast (Sample No. 4) 60
  Breakfast Menu Evaluation (Sample No. 5) 61
  Parents Survey Form for Breakfast (Sample No. 6) 62
  Student Survey Form for Breakfast (Sample No. 7) 63

SCHOOL BREAKFAST PROGRAM

I. IMPORTANCE OF BREAKFAST

A. Breakfast is one step towards good health.

1. Breakfast, one of the most important meals of the day,
    - a. Provides energy after the night time fast.
    - b. Furnishes a good start for the day.
    - c. Prevents mid-morning headache and fatigue.
    - d. Promotes increased work output.
    - e. Encourages children to be more alert and productive throughout the morning.
2. People often find it difficult to eat early in the morning.
    - a. Because of the dislike of usual foods served, such as eggs, cereal, etc.
    - b. Due to busy schedules and lack of time.
3. The food children eat daily makes a difference in the way they look and feel; also, how they grow and learn.
4. Recent studies indicate that breakfast is an area that needs improvement.
    - a. One study shows that as many as 80% of the nation's children go to school without an adequate breakfast.
        - (1) When breakfast is skipped, the child may go without food until snack or lunch time.
        - (2) The child's energy will then be low, and he may not be able to learn.
        - (3) A child seldom makes up at other meals food that is missed at breakfast.
    - b. Findings have indicated that from 8 to 37% of students do not eat breakfast.* One study indicated that, on the day of the survey, about 20% of Oklahoma children did not eat breakfast.**
        - (1) This means that most children are going to school improperly nourished.
        - (2) Nutritionists agree ¼ to ⅓ of the day's required nutrients must be consumed at breakfast if one is to maintain maximum growth and productivity.
        - (3) To make up for the omitted nutrients, children and even adults tend to nibble on sweets, snacks, and candy bars to subside mid-morning hunger, all of which can lay the groundwork for malnutrition.
        - (4) The body is being deprived of about ¼ of its needed nourishment at the time it needs it most.
        - (5) Nutritionists and educators have long agreed that children who are well nourished are better able to study and to concentrate on their lessons and are, therefore, better students.
        - (6) Some children also are more likely to enjoy participating in recreation activities and are less inclined to be obese.
        - (7) Undernourished children are easily distracted and tend to have trouble at school.
5. Studies indicate that if a child is to achieve optimum performance his nutritional needs must be met.
    - a. Children who are hungry or undernourished are unable to respond to the usual educational stimulation.
        - (1) They tend to exhibit apathy, lethargy, and shortened attention span.

---

*Children's Foundation, 1978

**State Department of Education, 1979

(2) Learning is hampered because of their inability to concentrate.
(3) Children may exhibit hyperactivity or irritability which sets up obstacles to the learning process.

b. Hunger and its consequences may upset the learning process.

(1) Learning is recognized as progressing in stages, with each stage serving as the basis for the next developmental period.
(2) A hungry child is unable to respond to early stimulation and probably will gradually become less able to benefit from his later experiences.

B. Meal patterns of Americans are undergoing change.

1. Breakfast has increasingly become an individual meal in the American home due to family members following separate morning schedules.
2. The working mother may prepare breakfast for the younger children but the older ones are left to make it themselves.
3. As children grow older, the number who skip breakfast increases.
4. The skipped breakfast habit becomes a little more prevalent among girls than boys.

a. Girls tend to become more weight conscious and are inclined to regard breakfast as a means of taking off a few unwanted pounds.
b. Poor habits formed by either boys or girls tend to carry over into adulthood.
c. Most families experience some degree of inadequate nutrition.

5. Not only the children of poor families or of working mothers are found to be undernourished.

a. Poor nutrition cuts across class lines.
b. Poor nutrition cuts across economic boundaries.

C. The United States has an abundance of food.

1. Even with the abundance of food, the problem of hunger and inadequate nutrition exists.

a. The reasons include:

(1) Poverty.
(2) Lack of nutrition education.
(3) Insufficient intake of foods vital to health.
(4) Disinterest in food and nutrition.

b. There are means available to help combat any serious nutrition problem.

(1) One way is the nutritionally balanced breakfast served at school.
(2) Another is to make available to all students the material about the Breakfast Program.

D. Some schools are reporting that the implementation of the Breakfast Program facilitates learning and reduces behavioral problems.

II. SCHOOL BREAKFAST PROGRAM

A. Permanent authorization for the School Breakfast Program was made possible by Public Law 94-105, enacted October 7, 1975. Congress states that the intent was that " . . . the School Breakfast Program was made available to all schools where it is needed to provide adequate nutrition for children in attendance."
B. Cash reimbursement from the USDA is provided to schools that improve the diets of students by serving breakfast.
C. Congress has directed USDA and state agencies to carry out a program of information to further the Breakfast Program.

1. The School Breakfast Program is similar to the National School Lunch Program, offering:

        a. Financial assistance.
        b. Technical assistance and guidance to establish and operate a program.

    2. Students can purchase breakfast at a reasonable price.
    3. Children, who have been determined to be eligible for free or reduced price lunches, are eligible for the same benefits under the Breakfast Program.

D. The School Breakfast Program also teaches fundamentals of a nutritionally sound breakfast, and in some cases, helps lighten the financial burden of impoverished families.

E. To participate in the School Breakfast Program, schools must agree to serve breakfasts based on the USDA Meal Pattern Guidelines.

F. Reimbursement is available for breakfast programs. Reimbursement rates may be adjusted from time to time.

G. The School Breakfast Program is available to public and some private non-profit schools of high school grade or under.

    1. Understanding of the National School Lunch Program, along with the systems, facilities, equipment, and personnel to support it can be helpful in adopting the Breakfast Program.
    2. With minor adjustments to existing scheduling of food service personnel, many "school lunch" schools find that they can easily participate in the Breakfast Program.
    3. To participate in the Breakfast Program, school personnel should:

        a. Contact the State School Lunch Office and request application forms.
        b. Change the School Lunch Policy Statement to include the Breakfast Program.
        c. Complete application forms and mail to the School Lunch Office.
        d. Agree to operate food service on a non-profit basis.
        e. Serve breakfasts that meet minimum standards.
        f. Offer a breakfast free or at a reduced price to any child determined to be eligible.
        g. Make breakfast available to all children regardless of race, color, national origin, or ability to pay.

III. REQUIREMENTS FOR THE SCHOOL BREAKFAST PROGRAM

A. Schools must agree to serve breakfast based on the USDA Meal Pattern Guidelines. Breakfast requirements are simple, yet provide children with a good beginning toward meeting their daily dietary needs.

B. Minimum requirements

    1. Fluid Milk—½ pint of fluid milk can be served as beverage, on cereal, or used in part for each purpose.
    2. Fruit or Vegetable or both or full-strength fruit or vegetable juice—½ cup serving.
    3. Bread or cereal—one slice of whole grain or enriched bread; or the equivalent serving of cornbread, rolls, etc. with whole grain or enriched or fortified cereal; granola; or a combination of these products. Refer to Samples No. 1 and 2 in this section for suggested serving sizes of bread/bread alternate.

C. Recommendations: To help meet children's nutritional needs, a breakfast should also contain as often as possible; meat or meat alternate—one egg, one ounce serving (edible portion as served) of meat, poultry or fish, one ounce cheese; two tablespoons of peanut butter or a combination of the above, and additional foods as desired.

D. Breakfast menus should be planned creatively considering the basic Breakfast Program requirements and the following recommendations:

    1. Include foods with a variety of colors, flavors, textures, shapes, sizes, and temperatures.
    2. Consider specific likes of each age group.
    3. Occasionally include non-traditional breakfast foods.
    4. Regulations point out that in scheduling breakfast service, schools should attempt to provide breakfast as close as possible to the beginning of the school day, in order to avoid "plate waste," which occurs when breakfast is served too close to lunch.

BREADS AND BREAD ALTERNATES FOR SCHOOL LUNCH (Sample No. 1)

Group A: Breads, Rolls, and Quick Breads

1 serving = 25 grams or 0.9 oz.

½ serving = 13 grams or 0.5 oz.

¾ serving = 19 grams or 0.7 oz.

¼ serving = 7 grams or 0.2 oz.

- Bagels
- Biscuits
- Boston Brown Bread
- Buns (All Types)
- Cornbread
- Cracked Wheat Bread
- English Muffins
- French or Vienna Bread
- "Fry" Bread
- Italian Bread
- Muffins
- Pretzels (Soft)
- Pumpernickel
- Raisin Bread
- Rolls (All Types)
- Rye Bread
- Stuffing (Bread weight)
- Syrian Bread (Pita, Pocket or Flat)
- White Bread
- Whole Wheat Bread

Group B: Crackers and Low Moisture Breads

1 serving = 20 grams or 0.7 oz.

½ serving = 10 grams or 0.4 oz.

¾ serving = 15 grams or 0.5 oz.

¼ serving = 5 grams or 0.2 oz.

- Bread Sticks (dry) (4)
- Graham Crackers
- Melba Toast
- Rye Wafers
- Saltine Crackers
- Soda Crackers
- Taco Shells (2)
- Zwieback

Group C: Miscellaneous Items

1 serving = 30 grams or 1.1 oz.

½ serving = 15 grams or 0.5 oz.

¾ serving = 22 grams or 0.8 oz.

¼ serving = 8 grams or 0.3 oz.

- Dumplings
- Hush Puppies
- Meat/Meat Alternate Pie Crust
- Meat/Meat Alternate Turnover Crust
- Pancakes
- Pizza Crust
- Sopapillas
- Spoonbread
- Tortillas
- Popovers
- Waffles

Group D: Pasta and Cereal Grains (Enriched or Whole-Grain)

1 serving = ½ cup

½ serving = ¼ cup

¾ serving = 3/8 cup

¼ serving = 1/8 cup

- Bulgur
- Corn Grits
- Lasagna Noodles
- Macaroni
- Noodles (egg)
- Rice
- Spaghetti

BREADS AND BREAD ALTERNATES FOR THE SCHOOL BREAKFAST PROGRAM (Sample No. 2)

All breads and bread alternates included in the Bread Groups for School Lunch plus the following items meet the bread requirements for the Breakfast Program:

Breakfast Program – Additional Breads/Bread Alternates

Bulgur
Corn Grits
Cornmeal
Dry Cereals
Farina
Rice
Rolled Oats
Rolled Wheat
Wheat Cereal

Note:
Requirements for serving sizes of whole-grain or enriched or fortified cereal specify: either ¾ cup serving or 1 oz., whichever is the lesser amount.

Breakfast Program – Miscellaneous Items

Serving Size
Coffee Cake = 25 grams or .09 oz.
Doughnuts = 25 grams or .09 oz.
Pancakes = 30 grams or 1.1 oz.
Sweet Rolls = 25 grams or .09 oz.
Waffles = 30 grams or 1.1 oz.

Note:
Bread ingredients (with flour as the primary ingredient) in these products must provide indicated minimum weights. These items contain considerable amounts of sugar and/or fat. Keep this in mind when considering how frequently to serve them.

5. Serve the breakfast even when preparation facilities are limited.
6. Evaluate the breakfast menu as it relates to the lunch menu for any given day:
   a. Nutritional value.
   b. Preparation time.
   c. Availability of equipment.
   d. Student appeal.

E. Record keeping requirements:
   1. Are similar to lunch record keeping requirements in regard to recording quantities of food served.
   2. Refer to the Oklahoma Menu Planning Book.

IV. NUTRIENTS IN THE SCHOOL BREAKFAST

A. No one food contains all the nutrients needed by the body. Used together, however, the components of the breakfast pattern supply many of the nutrients necessary for our children's health and development.
   1. Milk: Fluid milk is defined as flavored or unflavored, whole, low-fat, skim, or buttermilk which meet program regulations. Milk is the leading source of calcium and also provides

good quality protein, riboflavin, vitamin A, vitamin D (if fortified), as well as phosphorus and other nutrients.

2. Fruit or vegetable or fruit juice or vegetable juices: Citrus fruits, like oranges and grapefruit are not only high in vitamin C, but add appetizing color and taste to breakfast. Other good sources of vitamin C include strawberries, tomato juice, and cantaloupe. Dried fruits, like raisins and prunes are valuable for iron. In addition, most fruits and vegetables provide fiber.
3. Bread and cereals: Whole-grain or enriched breads provide some of the vitamins (thiamin and niacin) as well as minerals (especially iron) and calories. In addition, whole-grain breads and cereals also add fiber to the diet.
4. Meat and meat alternate: The protein rich foods make up this food group. Some of these foods are meat, cheese, eggs and peanut butter. These foods should be served at least once a week, and more often if possible. This group contributes proteins of top quality. Cereals, bread, vegetables, and fruits also provide some protein, but of lower quality. The main nutrients this group of foods contribute to the diet are protein, iron and B vitamins.

B. Additional foods served with breakfast:

1. May include bacon; jams, jellies, honey, syrup, sugar, or other sweeteners.
2. Help to round out the breakfast, satisfy appetites, and meet the energy needs of children.
3. The main nutritional contribution of such foods is carbohydrates.
    a. Carbohydrates play an important role in the utilization of other nutrients.
        (1) The body needs enough daily to help maintain normal body weight.
        (2) Excessive amounts cause obesity and other health related problems.
4. It is suggested that highly concentrated sweet breakfast items be served as little as possible.

V. BREAKFAST MENUS

A. Cycle or rotating menus are carefully planned and then used and repeated for a definite period or cycle of time.
B. Breakfast menus should be planned for a minimum two-week cycle and preferably a three-week cycle to assure variety in the meal and as a management tool in purchasing and cost control. Refer to Samples No. 3 and 4 for suggested sample three week menu cycles.

VI. BREAKFAST MENU EVALUATION

A. After the foods and portion sizes to be used have been selected and recorded,

1. Follow through on the total job of planning menus.
2. Determine the total amount of foods needed.
3. Estimate costs.
4. Prepare market orders.
5. Prepare work schedules.

B. Breakfast menu evaluation (See Sample No. 5).

VII. SURVEY FORMS FOR BREAKFAST

A. Parent Survey Forms (See Sample No. 6).
B. Student Survey Form (See Sample No. 7).

THREE WEEKS CYCLE MENUS FOR BREAKFAST (Sample No. 3)

Menu No. 1 Milk Orange Juice Scrambled Eggs Biscuits - Butter Jelly	Menu No. 6 Milk Pineapple Juice Toasted Cheese Sandwich	Menu No. 11 Milk Apple Juice Oatmeal Buttered Toast
Menu No. 2 Cocoa * Fresh Fruit in Season Crisp Bacon Cinnamon Toast	Menu No. 7 Milk Fresh Fruit in Season Sausage Links Peanut Butter Yummy Roll	Menu No. 12 Milk Fruit Cup Ham Biscuits - Butter
Menu No. 3 Milk Tomato Juice Sausage Pattie/Gravy Yeast Biscuit - Butter	Menu No. 8 Milk Rice with Raisins Cinnamon Apple Pizza	Menu No. 13 Milk Orange Juice French Toast - Syrup
Menu No. 4 Milk Orange Juice Pancakes - Butter Syrup	Menu No. 9 Milk Orange Juice Scrambled Egg/Diced Ham Rolled Wheat Muffins Butter	Menu No. 14 Milk Fresh Fruit in Season Cinnamon Rolls
Menu No. 5 Milk Banana Oven Fried Egg Buttered Toast	Menu No. 10 Cocoa * Orange Wedges Peanut Butter Sandwich	Menu No. 15 Milk Banana Scrambled Eggs Buttered Toast

* The use of dry milk is not acceptable for making cocoa. The recipe for making cocoa is found in the USDA Recipe File.

THREE WEEKS CYCLE MENU FOR BREAKFAST (Sample No. 4)

Menu No. 1 Milk Orange Juice Oven Fried French Toast Honey	Menu No. 6 Milk Orange & Grapefruit Sections Doughnut	Menu No. 11 Milk Purple Plums English Muffin/Jam
Menu No. 2 Milk Grapefruit Caramel Peanut Butter Roll	Menu No. 7 Milk Pineapple Juice Pancakes - Syrup	Menu No. 12 Milk Orange & Grapefruit Sections Choice of Ready-to-Eat Cereal
Menu No. 3 Milk Banana Cornflakes	Menu No. 8 Milk Orange Juice Cornflakes	Menu No. 13 Milk Fruit Cocktail Cinnamon Topped Muffin
Menu No. 4 Milk Apple Juice Steamed Rice/Raisins	Menu No. 9 Milk Grapefruit/Orange Juice Sweet Roll	Menu No. 14 Milk Grapefruit Juice Blueberry Waffle Syrup
Menu No. 5 Milk Grape Juice Muffin with Honey	Menu No. 10 Milk Pineapple Juice Raisin Bran Flakes	Menu No. 15 Milk Sliced Peaches Sopapillas/Honey

BREAKFAST MENU EVAUATION (Sample No. 5)

After the foods and portions sizes to be used have been selected and recorded, check menus against the questions below. Follow through on the total job of planning menus; determine the total amounts of foods needed, estimate costs, and prepare market orders and work schedules.

	YES	NO	COMMENTS
A. Does Breakfast Meet Requirements?			
1. Are all three components of the breakfast included?			
2. Are serving sizes sufficient to provide each child at least:			
a. One-half pint of fluid whole milk as a beverage or on cereal?			
b. One-half cup fruit or vegetable or full-strength fruit or vegetable juice?			
c. Three-fourths cup serving of whole-grain cereal or enriched or fortified cereal; or one slice of whole-grain or enriched bread; or an equivalent quantity of any combination of these foods?			
B. Does Breakfast Follow Nutritional Recommendations?			
1. Is a vitamin C food included frequently?			
2. Are foods for iron served each day?			
3. Is a one-ounce portion of meat or meat alternate served as often as possible?			
4. Are additional foods included to help meet nutritional needs and satisfy appetites?			
C. Are the Combinations of Foods Pleasing and Acceptable to children?			
D. Can Breakfasts be Prepared and Served Successfully?			
1. Are menus planned so that some preparation can be done ahead?			
2. Is work load balanced among employees?			
E. Can Breakfasts be Prepared and Served with Facilities and Equipment Available?			
1. Is oven and surface-cooking space adequate for each breakfast?			
2. Is refrigeration adequate to care for perishable foods?			
3. Are milk boxes large enough to accommodate milk for two meals a day?			
F. Has Cost Been Considered?			
1. Have plentiful foods been included as often as practicable?			
2. Have foods in inventory been used to the extent possible?			
2. Do high- and low-cost foods in menus balance?			
G. Has a Variety of Different Food Been Planned?			

PARENTS SURVEY FORM FOR BREAKFAST (Sample No. 6)

BREAKFAST, ANYONE?

Dear Parent:
Rising food prices . . . more working parents . . . longer bus rides to school . . . for a number of reasons, many children start their day without breakfast or with an inadequate breakfast. It's widely known that morning hunger and poor nutrition can seriously interfere with a child's ability to learn, therefore, many children may need the School Breakfast Program! Please complete the following questions and return to school as soon as possible. Your cooperation is appreciated.

1. DO YOU THINK BREAKFAST SHOULD BE SERVED AT SCHOOL?

YES ☐

NO ☐

2. HOW OFTEN DO YOU THINK YOUR CHILDREN WOULD EAT IF BREAKFAST WERE OFFERED AT SCHOOL?

ONCE A WEEK ☐

THREE TIMES A WEEK ☐

TWICE A WEEK ☐

EVERY DAY ☐

68

STUDENT SURVEY FORM FOR BREAKFAST (Sample No. 7).

BREAKFAST, ANYONE?

STUDENTS PLEASE FILL IN THE ANSWERS TO THE QUESTIONS BELOW:

1. DID YOU HAVE BREAKFAST THIS MORNING?

YES ☐ NO ☐

2. DO YOU USUALLY EAT BREAKFAST?

YES ☐ NO ☐

3. CHECK THE BREAKFAST FOODS YOU EAT

a. Fruit or juice? ☐
b. Cereal with milk? ☐
c. Bread, toast, rolls? ☐
d. Butter or spreads? ☐
e. Milk? ☐
f. Eggs? ☐
g. Meat? ☐
h. Pancakes or waffles? ☐
i. Other beverages? ☐
j. Other foods? ☐

4. IF BREAKFAST WERE SERVED AT SCHOOL WOULD YOU EAT?

YES ☐ NO ☐

5. HOW OFTEN WOULD YOU EAT BREAKFAST AT SCHOOL?

ONCE A WEEK ☐
TWICE A WEEK ☐
THREE TIMES A WEEK ☐
EVERY DAY ☐

BIBLIOGRAPHY

Fleck, Henrietta and Munves, Elizabeth, *Introduction to Nutrition*, The Macmillan Company, New York, 1962.

Goodwin, Mary T. and Pollen, Gerry, *Creative Food Experiences for Children*, Center for Science in the Public Interest, 1974.

Robinson, Corinne H. and Lawler, Marilyn R., *Normal and Therapeutic Nutrition*, Macmillan Publishing Company, New York, 1977.

Stare, Frederick J. and McWilliams, Margaret, *Living Nutrition*, John Wiley & Sons, Inc., New York, 1977.

Building a Better Diet, Food Stamps Program Aid No. 1241, United States Department of Agriculture, Food and Nutrition Service, 1979.

Food, A Publication on Food and Nutrition by United States Department of Agriculture, Home & Garden Bulletin No. 228, Science and Education Administration, U.S. Department of Agriculture, 1980.

Food for Youth Study Guide, Food and Nutrition Service, United States Department of Agriculture, 1975.

Nutrition and Your Health, United States Department of Agriculture, United States Department of Health, Education, and Welfare, Superintendent of Documents, U.S. Goverment Printing Office, Washington, D.C., 1980.

SECTION II
RECIPES

Page

I. Standard Recipes 67
II. Information Included in a Standard Recipe 68
III. Procedure for Using a Standardized Recipe 68
IV. Evaluation of the Standardized Recipe 69
V. Organization is the Key to a Workable Recipe File 70
VI. Recipe Adjusting 70
  Fractional Parts of Common Measures (Chart No. 1) 73
  Recipe Adjusting (Chart No. 1, 2, 3, 4, 5, and 6) 74
VII. Cheese Alternate Products 79
VIII. Enriched Macaroni Products with Fortified Protein 79
IX. Procedure for Calculating the Amount of Raw Meat, Water and Textured Vegetable Protein Products when Combined to Meet Requirements 79
  Textured Vegetable Protein (Chart No. 7) 80
  Terms and Abbreviations 81
  Approximate Weights of Fresh Fruits and Vegetables (Chart No. 8) 82
  Table of Weights and Approximate Measures (Chart No. 9) 83
  Conversion Table for Active Dry Yeast (Chart No. 10) 84
  Approximate Substitutions Equivalents (Chart No. 11) 85
  Substitutions Equivalents Using Dehydrated Vegetables for Seasoning (Chart No. 12) 85
  Conversion Table for Cooking with Dried Eggs (Chart No. 13) 86
  Measures and Terms (Chart No. 14) 87
  Weights, Measures and Sizes of Cans (Chart No. 15) 87
  Pan Capacity Chart (Chart No. 16) 88
X. The Metric System 88
  Conversion Table for Units of Weights 89
  Conversion Table for Units of Liquid Measure 90
  Conversion Table for Changing Celsius (Centigrade) Temperature Readings to Fahrenheit Temperature Readings 90
  Approximate Temperatures—Degrees Celsius vs Fahrenheit 91

STANDARDIZED QUANTITY RECIPES

I. STANDARDIZED RECIPES*

A. A standardized recipe is one which has been carefully tested for quality and yield, so that the same finished product is produced each time the recipe is used. It includes:

1. The best and easiest way of combining the ingredients.
2. The most appropriate utensil for cooking the product.
3. The best temperature and length of time to cook the product.
4. The most appropriate size and number of servings.

B. Reasons for standardization are:

1. To serve quality meals consistently, recipes and portions must be uniform.
2. To save time and money; eliminate guesswork and waste due to poor estimating of quantities and failures in cooking.
3. To simplify purchasing and help establish what and how much is needed.
4. To control food costs; exact quantities of foods needed have been established if standardized recipes are used.
5. For production control.
    a. With standardized recipes, management is less dependent on whims of the individual.
    b. Use of standardized recipes will help eliminate shortage of food at serving time and/or costly leftovers.
6. Merchandising—standardized recipes used for basic menu items allow more time to develop customer-pleasing items and merchandising techniques.
7. Job satisfaction—use of standardized recipes creates a feeling of job security and satisfaction.

C. When using non-standardized recipes,

1. Evaluate recipes from sources other than:
    a. Consumer and Marketing Service.
    b. U.S. Department of Agriculture.
    c. Oklahoma State Department of Education.

"I found this wonderful recipe—How much is 400 times a pinch of salt?"

2. Evaluate on the basis of:
    a. What contribution it makes to the meal requirements.
    b. Whether it is appropriate for the type of food service.
    c. Whether it requires skills and/or equipment not available in the program.
    d. Whether the cost is practical for the individual program.

All "Swords" cartoons in this Handbook are reprints from the School Food Service Journal and have been used through the courtesy of the American School Food Service Association.

---

*All references to USDA recipes are from the USDA Quantity Recipes, PA-631 Revised August 1971.

II. INFORMATION INCLUDED IN A STANDARDIZED RECIPE

A. The recipe identification should include the:

   1. Name of the recipe.
   2. Card number of the recipe.

B. The yield shown in the number of servings.
C. The size of servings shown in volume, weight, or size portion.
D. The ingredients listed in the order and form of use.
E. The quantity of each ingredient given in both weights and measures.
F. Clear, precise instructions for:

   1. Preparing and combining the ingredients.
   2. The cooking method, time, and temperature.

      a. USDA Quantity Recipes and Oklahoma Recipes, temperature and time directions are calculated for use in conventional and/or stack (deck) ovens.
      b. Adjustments should be made for use in convection ovens—refer to USDA Recipe Card.

G. Variations in the recipe and/or substitutions.
H. Pan size to use for baked or congealed items.

   1. When the size is important to the quality of the finished product.
   2. When the size makes a difference in the way the product is portioned.
   3. Example: "Jellied Fruit Cottage Cheese" (USDA Recipe Card E–12), the number of pans to use, as well as the size of the pan, is given because this information is essential to obtain the portion size specified.

I. Space to record adjustments made in the recipe pertinent to the portions needed for a specific participation number.
J. A market guide and the amounts of foods needed "as purchased" appears on the back of all USDA recipe cards.
K. Suggested menus are listed on the back of the USDA "Main Dish" recipes.
L. Contribution to the meal requirements is shown on all USDA recipes which provide at least one ounce of protein-rich food or its equivalent or ¼ cup of fruit and/or vegetable. (For additional information, see USDA Recipe Card A-1.)

III. PROCEDURE FOR USING A STANDARDIZED RECIPE

A. Read the total recipe thoroughly before using.

   1. Note all information given.
   2. Know terms and abbreviations used. (See terms listed in this section.)

B. Adjust the recipe for individual participation.

   1. Each standardized recipe is developed to provide the exact number of portions indicated.

      a. Recipes in the USDA Recipe File are calculated to provide 100 portions of a specified size or a given quantity of food.
      b. Since most schools will not serve exactly 100 lunches each day, it may be necessary to increase or decrease the servings according to participation in the program.
      c. Refer to USDA Recipe Card A-3 for instructions on "How To Calculate The Quantities of Food Needed."
      d. USDA Recipe Card A-4 contains, "Conversion Charts," a tool for simplifying the recipe adjusting process. These charts have been included in this section.

   2. Points to consider when adjusting recipes:

      a. Number of servings required.
      b. Size and amount of equipment available.

C. List the food and the amounts of ingredients needed to prepare the recipe.

1. Check to see what food is on hand.
2. Make a list of the foods that must be purchased.

a. Determine the "as purchased" (AP) quantities needed.

(1) The market guide on the back of the USDA recipes will show the AP amounts.
(2) The amount of ingredients required to obtain cooked amounts in a recipe.
(3) Once calculated, record the amount to purchase on the recipe card for future use in making market orders.

b. Determine quantity required in the recipe in terms of number of cans, pounds, pecks, or bushels to purchase.
c. Refer to USDA Recipe Cards A-3, 4, 5, 6, 8, 9, Recipe Adjusting Charts, Table of Weights and Approximate Measures, Sizes of Cans, etc., in this section.

D. Assemble the utensils, tools, and ingredients. Arrange the items in the best sequence for maximum use of both hands and arms.
E. Weigh and measure ingredients accurately.
F. Follow directions for:

1. Combining ingredients.
2. Cooking the product.

IV. EVALUATION OF THE STANDARDIZED RECIPE

A. Factors determining the end product of a recipe:

1. Reading information about ingredients correctly. There is a great difference between "one quart of sifted flour" and "one quart of flour sifted."
2. Using the correct oven temperature.

a. Many recipes refer to a slow, moderate, hot, and very hot oven. The following chart may be used to determine these temperatures.

Slow	300° F.–325° F.	Hot	400° F.–425° F.
Moderate	350° F.–375° F.	Very Hot	450° F. and over

b. Type of oven for which temperature is given

(1) If not stated otherwise, the temperature given means standard or stack (deck) ovens.
(2) If using a convection or microwave oven, follow the individual equipment instructions regarding time and temperature adjustments.

c. Faulty oven thermostats will not give correct temperatures and should be repaired.

3. Following the correct cooking time.

a. Excess cooking tends to make a product lose flavor, have excess shrinkage, or become dry.
b. Undercooking may cause products to have poor texture or under-developed flavor.
c. The use of a kitchen clock or a timer is important.

4. Using high quality raw food in the product.

a. Quality affects the volume produced.
b. Poor quality meats, fruits, and vegetables will detract from the final results.

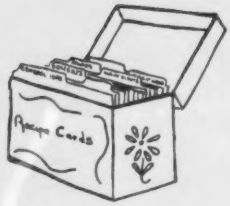
5. Utilizing the proper equipment

a. Pans with high sides produce different results than pans with low sides.
b. Ovens produce a different product than steamers.

B. Individual preferences and variations in preparation techniques should be compared with methods given in the standardized recipe.

V. ORGANIZATION IS THE KEY TO A WORKABLE RECIPE FILE

A. Obtain a sturdy file box for filing recipes. (Suggested size 8½" × 12")



B. Use the Standardized USDA Recipes as the basic recipe file. Combine the Oklahoma recipes and any additional recipes with the USDA recipes in the following manner:

1. USDA Index
   Oklahoma Index
   USDA General Information
   Oklahoma General Information
   Additional General Information
2. USDA Cereal Products Index
   Oklahoma Cereal Products Index
   USDA Cereal Products
   Oklahoma Cereal Products
   Additional Cereal Products
3. USDA Desserts Index
   Oklahoma Desserts Index
   USDA Desserts
   Oklahoma Desserts
   Additional Desserts
4. USDA Main Dish Index
   Oklahoma Main Dish Index
   USDA Main Dishes
   Oklahoma Main Dishes
   Additional Main Dishes
5. USDA Salad Index
   Oklahoma Salads Index
   USDA Salads
   Oklahoma Salads
   Additional Salads
6. USDA Salad Dressing Index
   Oklahoma Salad Dressing Index
   USDA Salad Dressing
   Oklahoma Salad Dressing
   Additional Salad Dressing
7. USDA Sandwiches Index
   Oklahoma Sandwiches Index
   USDA Sandwiches
   Oklahoma Sandwiches
   Additional Sandwiches
8. USDA Sauces & Gravies Index
   Oklahoma Sauces & Gravies Index
   USDA Sauces and Gravies
   Oklahoma Sauces and Gravies
   Additional Sauces and Gravies
9. USDA Soups Index
   Oklahoma Soups Index
   USDA Soups
   Oklahoma Soups
   Additional Soups
10. USDA Vegetable Index
    Oklahoma Vegetable Index
    USDA Vegetables
    Oklahoma Vegetables
    Additional Vegetables
11. Classification of Recipes (Summary)

C. As each "additional recipe" is filed, it should be given a number on the index card and the same number placed on the recipe card.

D. As a recipe is used, valuable information may be recorded on the card for future reference, such as:

1. Cost of recipe.
2. Cost per serving.
3. Size of portion.
4. Number served.

VI. RECIPE ADJUSTING

A. Helpful aids designed to assist with calculations.

1. USDA Quantity Recipes were developed to provide 100 portions.
2. Recipe adjusting charts have been designed to eliminate the difficult task of working with fractions.
   a. Find the number of portions needed to prepare on one of the five charts.

b. Any amount of an ingredient given on the recipe for 100 portions is increased or reduced for the user.

c. Examples given on each chart will demonstrate how to use the charts.

3. A chart of "Fractional Parts of Common Measures," USDA Recipe Card A–9, reprinted in this section (Chart No. 1), aids in changing fractional parts to a measure or weight that can be accurately measured or weighed. (For example: ⅛ quart is ½ cup.)

a. Use this chart to change fractions to whole numbers before attempting to add two fractions.
Example: A recipe for 100 portions calls for 1½ cups of an ingredient.
To increase to 275 portions, the chart shows:

1 cup increased from 100 to 275 portions = 2¾ cups (¾ cups = 12 tbs.)
½ cup increased from 100 to 275 portions = 1⅜ cups (⅜ cups = 6 tbs.)

3 cups + 18 tbs. =
3 cups + 1⅛ cups =
4⅛ cups

b. Even though it is necessary to find a common denominator in some instances, this will be simplified by using USDA Recipe Card A–9 before starting calculations.

c. In order to use figures that can be accurately weighed or measured, some fractional parts have fallen in a category where it has been necessary to add a plus (+) or a minus (−). When this occurs, one must make the decision as to what degree the measure of the ingredient should be considered "scant or rounded."

B. Upon completion of the recipe adjustment:

1. *TEST* the recipe before arriving at a definite decision as to its standardization.
2. Check taste, appearance, quality, and student appeal.
3. Repeat the testing if unsatisfied with the product.
4. If changes are to be made, change only one factor at a time.
5. When a product is acceptable by your standards for use in your kitchen, record the amounts to be used on the original recipe card.
6. Other comments which might be helpful to record are:

a. Contribution to meeting school meal requirements.
b. Acceptability by the children.
c. Variations that may be used.

C. Do not plan to complete all the information at once; organizing the recipe file will be a constant project.

D. Recipe adjusting when the recipe to be adjusted yields other than 100 portions.

1. To *increase* the yield on recipes with a yield other than 100 portions.

a. Divide the yield of the recipe to be adjusted into the total servings needed in the local program.
b. Divide until there are three numbers in the answer. This figure will be the column to be used for adjusting the recipe for the number of portions needed.
c. Examples:

(1) The recipe to be adjusted had a yield of 90. Portions needed in the local program are 350. Divide 90 into 350 and divide until there are three numbers in the answer. The answer is 389. Use the figures in the 388 column for adjusting this recipe, and it will be adjusted for 350 portions.

(2) The recipe to be adjusted has a yield of 110. Portions needed in the local progam are 350. Divide 110 into 350 and divide until there are three numbers in the answer. The answer is 318. (When the answer falls between two columns on the chart, it is suggested that the next highest column be used.) Use figures in the

column for 325 for adjusting this recipe, and it will be adjusted for approximately 350 portions.

2. To decrease the yield on recipes with a yield other than 100 portions.
   a. Divide the yield of the recipe to be adjusted into the total servings needed in the local program.
   b. Divide until there are two numbers in the answer, and this figure will be the column to be used for adjusting the recipe for the number of portions needed.
   c. EXAMPLE: The recipe to be adjusted has a yield of 110. Portions needed in the local program are 68. Divide 110 into 68 and divide until there are two numbers in the answer. The answer is 61. (When the answer falls between two columns on the chart, it is suggested that the next highest column be used.) Use figures in column for 66 in adjusting this recipe, and it will be adjusted for approximately 68 portions.

AVOID LAST MINUTE HURRY, CONFUSION AND MISTAKES. PROCEDURE FOR USING A RECIPE:

READ TOTAL RECIPE
ADJUST IF NECESSARY
ASSEMBLE UTENSILS
GATHER INGREDIENTS AND PUT ON CART
WEIGH & MEASURE ACCURATELY
FOLLOW DIRECTIONS FOR
COMBINING INGREDIENTS
COOK AS DIRECTED

FRACTIONAL PARTS OF COMMON MEASURES (CHART NO. 1)

(See USDA Recipe Card A–9)

The following chart is designed to aid in changing fractional parts of pounds, gallons, cups, etc. to accurate weights or measures. For example: Reading from left to right, the table shows that ⅞ of one pound is 14 ounces; ⅓ of a gallon is 1 quart + 1⅓ cups; 1⁄16 of a cup is 1 tablespoon.

MEASURE	TABLESPOON	CUP	PINT	QUART	GALLON	POUND
1	3 tsp.	16 Tbsp.	2 cups	2 pints	4 quarts	16 ounces
7/8	2 1/2 tsp.	1 cup less 2 Tbsp.	1 3/4 cups	3 1/2 cups	3 quarts + 1 pint	14 ounces
3/4	2 1/4 tsp.	12 Tbsp	1 1/2 cups	3 cups	3 quarts	12 ounces
2/3	2 tsp.	10 Tbsp + 2 tsp.	1 1/3 cups	2 2/3 cups	2 quarts + 2 2/3 cups	10 2/3 ounces
5/8	2 tsp. (scant)	10 Tbsp.	1 1/4 cups	2 1/2 cups	2 quarts + 1 pint	10 ounces
1/2	1 1/2 tsp.	8 Tbsp.	1 cup	2 cups	2 quarts	8 ounces
3/8	1 1/8 tsp.	6 Tbsp.	3/4 cup	1 1/2 cups	1 quart + 1 pint	6 ounces
1/3	1 tsp	5 Tbsp. + 1 tsp.	2/3 cup	1 1/3 cups	1 quart + 1 1/3 cups	5 1/3 ounces
1/4	3/4 tsp.	4 Tbsp.	1/2 cup	1 cup	1 quart	4 ounces
1/8	1/2 tsp. (scant)	2 Tbsp.	1/4 cup	1/2 cup	1 pint	2 ounces
1/16	1/4 tsp. (scant)	1 Tbsp	2 Tbsp.	1/4 cup	1 cup	1 ounce

RECIPE ADJUSTING (Chart No. 2)

EXAMPLE: A recipe for 100 portions calls for ¾ tablespoon, teaspoon, cup, pint, quart, gallon, ounce, or pound of an ingredient. To adjust to 50 portions, find ¾ under the column headed "100 Portions" and follow across to the column headed "50 Portions." This will show that ⅜ is the amount to be used when serving 50 portions.

Refer to USDA Recipe Card A-9 to change fractional parts to accurate weight or measure. (For example: ⅜ of a tablespoon is 1⅛ teaspoons.)

100 Portions	12 Portions	25 Portions	33 Portions	50 Portions	66 Portions	75 Portions	88 Portions
1/8	1/16-	1/16-	1/16-	1/16	1/16+	1/8-	1/8-
1/4	1/16-	1/16	1/16+	1/8	1/8+	1/8+	1/4-
1/3	1/16-	1/16+	1/8-	1/8 +	1/4-	1/4	1/3-
3/8	1/16-	1/8-	1/8	1/4-	1/4	1/4+	1/3
1/2	1/16	1/8	1/8+	1/4	1/3	3/8	1/2-
5/8	1/16+	1/8+	1/4-	1/3-	3/8+	1/2-	1/2
2/3	1/16+	1/8+	1/4-	1/3	3/8+	1/2	5/8
3/4	1/16+	1/8+	1/4	3/8	1/2	1/2+	2/3
7/8	1/8-	1/4-	1/4+	1/2-	5/8	2/3	3/4
1	1/8	1/4	1/3	1/2	2/3	3/4	7/8
2	1/4	1/2	2/3	1	1 1/3	1 1/2	1 3/4
3	1/3	3/4	1	1 1/2	2	2 1/4	2 2/3
4	1/2	1	1 1/3	2	2 2/3	3	3 1/2
5	5/8	1 1/4	1 2/3	2 1/2	3 1/3	3 3/4	4 3/8
6	3/4	1 1/2	2	3	4	4 1/2	5 1/4
7	7/8	1 3/4	2 1/3	3 1/2	4 2/3	5 1/4	6 1/8
8	1	2	2 2/3	4	5 1/4	6	7
9	1 1/8	2 1/4	3	4 1/2	6	6 3/4	7 7/8
10	1 1/4	2 1/2	3 1/3	5	6 2/3	7 1/2	8 3/4
11	1 1/3	2 3/4	3 2/3	5 1/2	7 1/4	8 1/4	9 2/3
12	1 1/2	3	4	6	7 7/8	9	10 1/2
13	1 5/8	3 1/4	4 1/3	6 1/2	8 5/8	9 3/4	11 1/2
14	1 2/3	3 1/2	4 2/3	7	9 1/4	10 1/2	12 1/3
15	1 3/4	3 3/4	5	7 1/2	9 7/8	11 1/4	13 1/4
16	1 7/8	4	5 1/4	8	10 1/2	12	14 1/8
17	2	4 1/4	5 2/3	8 1/2	11 1/4	12 3/4	15
18	2 1/8	4 1/2	6	9	11 7/8	13 1/2	15 7/8
19	2 1/4	4 3/4	6 1/4	9 1/2	12 1/2	14 1/4	16 3/4
20	2 3/8	5	6 2/3	10	13 1/4	15	17 2/3

RECIPE ADJUSTING (CHART No. 3)

EXAMPLE: A recipe for 100 portions calls for ½ tablespoon, teaspoon, cup, pint, quart, gallon, ounce, or pound of an ingredient. To adjust to 150 portions, find ½ under the column headed "100 Portions" and follow across to the column headed "150 Portions." This will show that ¾ is the amount to be used when serving 150 portions.

Refer to USDA Recipe Card A–9 to change fractional parts to accurate weight or measure. (For example: ¾ of a pint is 1½ cups.)

100 Portions	125 Portions	133 Portions	150 Portions	166 Portions	175 Portions	188 Portions	200 Portions
1/8	1/8+	1/8+	1/4-	1/4-	1/4-	1/4-	1/4
1/4	1/3-	1/3	3/8	3/8+	3/8+	1/2-	1/2
1/3	3/8+	1/2-	1/2	1/2+	5/8-	2/3-	2/3
3/8	1/2-	1/2	5/8-	5/8	2/3	3/4-	3/4
1/2	5/8	2/3	3/4	7/8-	7/8	1-	1
5/8	3/4 +	7/8-	7/8+	1	1 1/8-	1 1/4-	1 1/4
2/3	7/8	7/8-	1	1 1/8	1 1/8+	1 1/4	1 1/3
3/4	7/8+	1	1 1/8	1 1/4	1 1/3-	1 1/3	1 1/2
7/8	1 1/8	1 1/8+	1 1/3	1 1/2-	1 1/2	1 2/3	1 3/4
1	1 1/4	1 1/3	1 1/2	1 2/3	1 3/4	1 7/8	2
2	2 1/2	2 2/3	3	3 1/3	3 1/2	3 3/4	4
3	3 3/4	4	4 1/2	5	5 1/4	5 2/3	6
4	5	5 1/3	6	6 2/3	7	7 1/2	8
5	6 1/4	6 2/3	7 1/2	8 1/3	8 3/4	9 1/3	10
6	7 1/2	8	9	10	10 1/2	11 1/4	12
7	8 3/4	9 1/3	10 1/2	11 2/3	12 1/4	13 1/8	14
8	10	10 2/3	12	13 1/3	14	15	16
9	11 1/4	12	13 1/2	15	15 3/4	16 7/8	18
10	12 1/2	13 1/3	15	16 2/3	17 1/2	18 3/4	20
11	13 3/4	14 2/3	16 1/2	18 1/3	19 1/4	20 2/3	22
12	15	16	18	20	21	22 1/2	24
13	16 1/4	17 1/3	19 1/2	21 2/3	22 3/4	24 1/2	26
14	17 1/2	18 2/3	21	23 1/3	24 1/2	26 1/3	28
15	18 3/4	20	22 1/2	25	26 1/4	28 1/4	30
16	20	21 1/3	24	26 2/3	28	30 1/8	32
17	21 1/4	22 2/3	25 1/2	28 1/3	29 3/4	32	34
18	22 1/2	24	27	30	31 1/2	33 7/8	36
19	23 3/4	25 1/3	28 1/2	31 2/3	33 1/4	35 3/4	38
20	25	26 2/3	30	33 1/3	35	37 2/3	40

RECIPE ADJUSTING (CHART No. 4)

EXAMPLE: A recipe for 100 portions calls for ¼ tablespoon, teaspoon, cup, pint, quart, gallon, ounce, or pound of an ingredient. To adjust to 266 portions, find ¼ under the column headed "100 Portions" and follow across to the column headed "266 Portions." This will show that ⅔ is the amount to be used when serving 266 portions.

Refer to USDA Recipe Card A–9 to change fractional parts to accurate weight or measure. (For example: ⅔ of a pound is 10⅔ ounces.)

100 Portions	225 Portions	233 Portions	250 Portions	266 Portions	275 Portions	288 Portions	300 Portions
1/8	1/4+	1/4+	1/3-	1/3	1/3+	3/8-	3/8
1/4	1/2+	5/8-	5/8	2/3	2/3+	3/4-	3/4
1/3	3/4	3/4+	7/8-	7/8	7/8+	1-	1
3/8	7/8-	7/8	1-	1	1+	1 1/8-	1 1/8
1/2	1 1/8	1 1/8+	1 1/4	1 1/3	1 3/8	1 3/8+	1 1/2
5/8	1 3/8	1 1/2-	1 1/2+	1 2/3	1 3/4-	1 3/4+	1 7/8
2/3	1 1/2	1 1/2+	1 2/3	1 3/4	1 7/8-	1 7/8+	2
3/4	1 2/3	1 3/4	1 7/8	2	2+	2 1/8	2 1/4
7/8	2	2+	2 1/4	2 1/3	2 3/8	2 1/2	2 5/8
1	2 1/4	2 1/3	2 1/2	2 2/3	2 3/4	2 7/8	3
2	4 1/2	4 2/3	5	5 1/3	5 1/2	5 3/4	6
3	6 3/4	7	7 1/2	8	8 1/4	8 2/3	9
4	9	9 1/3	10	10 2/3	11	11 1/2	12
5	11 1/4	11 2/3	12 1/2	13 1/3	13 3/4	14 3/8	15
6	13 1/2	14	15	16	16 1/2	17 1/4	18
7	15 3/4	16 1/3	17 1/2	18 2/3	19 1/4	20 1/8	21
8	18	18 2/3	20	21 1/3	22	23	24
9	20 1/4	21	22 1/2	24	24 3/4	26	27
10	22 1/2	23 1/3	25	26 2/3	27 1/2	28 7/8	30
11	24 3/4	25 2/3	27 1/2	29 1/3	30 1/4	31 2/3	33
12	27	28	30	32	33	34 1/2	36
13	29 1/4	30 1/3	32 1/2	34 2/3	35 3/4	37 1/2	39
14	31 1/2	32 2/3	35	37 1/3	38 1/2	40 1/3	42
15	33 3/4	35	37 1/2	40	41 1/4	43 1/4	45
16	36	37 1/3	40	42 2/3	44	46 1/8	48
17	38 1/4	39 2/3	42 1/2	45 1/3	46 3/4	49	51
18	40 1/2	42	45	48	49 1/2	51 7/8	54
19	42 3/4	44 1/3	47 1/2	50 2/3	52 1/4	54 3/4	57
20	45	46 2/3	50	53 1/3	55	57 5/8	60

RECIPE ADJUSTING (CHART No. 5)

EXAMPLE: A recipe for 100 portions calls for 2⅓ tablespoons, teaspoons, cups, pints, quarts, gallons, ounces, or pounds of an ingredient. To adjust to 325 portions, find the figure "2" and the figure "⅓" under the column headed "100 Portions" and follow across to the column headed "325 Portions." Add the two figures you find. This will show that 7½+ is the amount to be used when serving 325 portions.

Refer to USDA Recipe Card A–9 to change fractional parts to accurate weight or measure. (For example: ½ of a gallon is 2 quarts.)

100 Portions	325 Portions	333 Portions	350 Portions	366 Portions	375 Portions	388 Portions	400 Portions
1/8	3/8	3/8+	1/2-	1/2-	1/2-	1/2-	1/2
1/4	3/4+	7/8-	7/8	7/8+	1-	1-	1
1/3	1-	1 1/8-	1 1/8+	1 1/4-	1 1/4	1 1/3-	1 1/3
3/8	1 1/4-	1 1/4	1 1/3	1 3/8	1 3/8+	1 1/2-	1 1/2
1/2	1 5/8	1 2/3	1 3/4	1 7/8-	1 7/8	2-	2
5/8	2	2 1/8-	2 1/8	2 1/4	2 1/3	2 3/8	2 1/2
2/3	2 1/8	2 1/4	2 1/3	2 3/8	2 1/2	2 5/8	2 2/3
3/4	2 3/8	2 1/2	2 5/8	2 3/4	2 7/8-	2 7/8	3
7/8	2 7/8	2 7/8+	3	3 1/4-	3 1/4	3 3/8	3 1/2
1	3 1/4	3 1/3	3 1/2	3 2/3	3 3/4	3 7/8	4
2	6 1/2	6 2/3	7	7 1/3	7 1/2	7 3/4	8
3	9 3/4	10	10 1/2	11	11 1/4	11 2/3	12
4	13	13 1/3	14	14 2/3	15	15 1/2	16
5	16 1/4	16 2/3	17 1/2	18 1/3	18 3/4	19 3/8	20
6	19 1/2	20	21	22	22 1/2	23 1/4	24
7	22 3/4	23 1/3	24 1/2	25 2/3	26 1/4	27 1/8	28
8	26	26 2/3	28	29 1/3	30	31	32
9	29 1/4	30	31 1/2	32	33 3/4	34 7/8	36
10	32 1/2	33 1/3	35	36 2/3	37 1/2	38 3/4	40
11	35 3/4	36 2/3	38 1/2	40 1/3	41 1/4	42 2/3	44
12	39	40	42	44	45	46 1/2	48
13	42 1/4	43 1/3	45 1/2	47 2/3	48 3/4	50 1/2	52
14	45 1/2	46 2/3	49	51 1/3	52 1/2	54 1/3	56
15	48 3/4	50	52 1/2	55	56 1/4	58 1/4	60
16	52	53 1/4	56	58 2/3	60	62	64
17	55 1/4	56 5/8	59 1/2	62 1/3	63 3/4	66	68
18	58 1/2	60	63	66	67 1/2	69 7/8	72
19	61 3/4	63 1/4	66 1/2	69 2/3	71 1/4	73 3/4	76
20	66 1/2	66 5/8	70	73 1/3	75	77 2/3	80

RECIPE ADJUSTING (CHART No. 6)

EXAMPLE: A recipe for 100 portions calls for 7½ tablespoons, teaspoons, cups, pints, quarts, gallons, ounces, or pounds of an ingredient. To adjust to 475 portions, find the figure "7" and the figure "½" under the column headed "100 Portions" and follow across to the column headed "475 Portions." Add the two figures you find. This will show that 35⅝ is the amount to be used for 475 portions.

Refer to USDA Recipe Card A–9 to change fractional parts to accurate weight or measure. (For example: ⅝ of a quart is 2½ cups.)

100 Portions	425 Portions	433 Portions	450 Portions	466 Portions	475 Portions	488 Portions	500 Portions
1/8	1/2+	1/2+	1/2+	5/8-	5/8-	5/8-	5/8
1/4	1	1 1/8-	1 1/8	1 1/8+	1 1/4-	1 1/4-	1 1/4
1/3	1 3/8	1 3/8+	1 1/2	1 1/2+	1 5/8-	1 5/8	1 2/3
3/8	1 5/8-	1 5/8	1 2/3	1 3/4	1 3/4+	1 7/8-	1 7/8
1/2	2 1/8	2 1/8+	2 1/4	2 1/3	2 3/8	2 3/8+	2 1/2
5/8	2 2/3	2 2/3+	2 7/8-	2 7/8	3	3 1/8-	3 1/8
2/3	2 7/8-	2 7/8	3	3 1/8	3 1/8 +	3 1/4	3 1/3
3/4	3 1/8	3 1/4	3 3/8	3 1/2	3 5/8	3 2/3	3 3/4
7/8	3 3/4	3 3/4 +	4-	4	4 1/8	4 1/4	4 3/8
1	4 1/4	4 1/3	4 1/2	4 2/3	4 3/4	4 7/8	5
2	8 1/2	8 2/3	9	9 1/3	9 1/2	9 3/4	10
3	12 3/4	13	13 1/2	14	14 1/4	14 2/3	15
4	17	17 1/3	18	18 2/3	19	19 1/2	20
5	21 1/4	21 2/3	22 1/2	23 1/3	23 3/4	24 1/2	25
6	25 1/2	26	27	28	28 1/2	29 1/4	30
7	29 3/4	30 1/3	31 1/2	32 5/8	33 1/4	34 1/8	35
8	34	34 5/8	36	37 1/4	38	39	40
9	38 1/4	39	40 1/2	42	42 3/4	44	45
10	42 1/2	43 1/3	45	46 5/8	47 1/2	48 3/4	50
11	46 3/4	47 5/8	49 1/2	51 1/4	52 1/4	53 2/3	55
12	51	52	54	56	57	58 5/8	60
13	55 1/4	56 1/3	58 1/2	60 5/8	61 3/4	63 1/2	65
14	59 1/2	60 5/8	63	65 1/4	66 1/2	68 1/3	70
15	63 3/4	65	67 1/2	69 7/8	71 1/4	73 1/4	75
16	68	69 1/4	72	74 5/8	76	78	80
17	72 1/4	73 5/8	76 1/2	79 1/4	80 3/4	83	85
18	76 1/2	78	81	83 7/8	85 1/2	87 7/8	90
19	80 3/4	82 1/4	85 1/2	88 5/8	90 1/4	92 3/4	95
20	85	86 5/8	90	93 1/4	95	97 2/3	100

VII. CHEESE ALTERNATE PRODUCTS

A. Cheese substitutes used as extenders for cheese are usually made from hydrogenated vegetable oil and a form of milk protein.

B. Cheese alternate must be combined with natural or processed cheese and may meet no more than 50 percent of the meat/meat alternate requirement.

C. Cheese alternates combined with cheese may only be used in *cooked menu items*, such as:

1. Macaroni and cheese.
2. Cheeseburgers.
3. Grilled cheese sandwiches.
4. Pizza.

D. Only cheese alternates that appear on the USDA "Listing of Acceptable Cheese Alternate Products" and have substantially the following statement on the label may be used: "This product meets USDA-FNS specifications for cheese alternate products."

VIII. ENRICHED MACARONI PRODUCTS WITH FORTIFIED PROTEIN

A. Enriched macaroni products which have been fortified with a protein source are not the same as regular enriched macaroni.

B. Dry enriched macaroni with fortified protein may be used to meet no more than 50 percent of the meat/meat alternate requirement for a maximum ratio of one part enriched macaroni to one part cooked meat, poultry, fish, or cheese.

C. Products which can be used to meet 50 percent of the meat/meat alternate requirement must:

1. Appear on the USDA "Listing of Acceptable Enriched Macaroni Products with Fortified Protein."
2 Have the following statement on the label—"One ounce dry weight of the product meets one-half of the meat/meat alternate requirements of lunch or supper of the USDA Child Nutrition Programs when served in combination with one or more ounces of cooked meat, poultry, fish or cheese."

IX. PROCEDURE FOR CALCULATING THE AMOUNT OF RAW MEAT, WATER AND TEXTURED VEGETABLE PROTEIN PRODUCTS WHEN COMBINED TO MEET REQUIREMENTS

A. Textured vegetable protein (TVP) products are processed from soy and are usually in dehydrated granule, particle, or flaked form. Only TVP products that appear on the USDA "Listing of Acceptable TVP Products" and that have substantially the following statement on the label may be used: "This product meets the requirements of FNS Notice 219."

B. Specifications state that the moisture content of the hydrated form of textured vegetable protein product must be 60 to 65%.

1. To achieve this moisture level, mix one part dry textured vegetable protein product with 1.5 parts water (by weight).
2. Not more than 30 percent raw meat, poultry, or fish, on the basis of weight, may be replaced with the hydrated textured vegetable protein product.

   a. The following example illustrates how to substitute 30% hydrated TVP in a recipe.
   If a recipe calls for 17 pounds of ground beef, multiply
   17 pounds × 70% = 11.90 pounds or 12 pounds of ground beef
   17 pounds × 12% dry TVP = 2 pounds TVP
   17 pounds × 18% water = 3 pounds water (6 cups)
   17 pounds ground beef = 12 pounds ground beef + 2 pounds TVP + 3 pounds water
   EXAMPLE OF SAVING: 17 pounds of ground beef @ $1.70 per pound = $28.90
   12 pounds of ground beef @ $1.70 + 2 pounds of TVP @ 50¢ per pound = $21.40

   This represents a saving of $7.50 per one hundred students served.

84

b. The following example illustrates how to substitute 20% hydrated TVP in a recipe.
Use 17 pounds × 80% = 13.60 pounds or 13 pounds 9½ ounces ground beef
17 pounds × 8% TVP = 1.36 pounds or 1 pound 5¾ ounces TVP
(.36 × 16 = 5.76 ounce)
17 pounds × 12% water = 2 pounds water (4 cups)
17 pounds ground beef = 13 pounds 9½ ounces ground beef + 1 pound 5¾ ounces TVP + 2 pounds water (4 cups)

B. Textured vegetable protein must be combined with meat, poultry or fish.

1. Refer to the Textured Vegetable Protein (Chart No. 7) as a quick reference for TVP, meat, and water combinations required.
2. Refer to Section IV "Quantity Food Purchasing" in this handbook for additional information concerning TVP Utilization.

The following chart provides a simplified method to determine amount of TVP and water required. Column No. 1 reflects the total amount of meat indicated in a recipe. Columns 2, 3, and 4 indicate the amount of meat, TVP and water required.

TEXTURED VEGETABLE PROTEIN (Chart No. 7)

MAXIMUM APPROVED PROPORTIONS FOR USE IN NATIONAL SCHOOL LUNCH PROGRAMS

1	2	3	4	
TOTAL - IF THE GROUND BEEF RECIPE CALLS FOR	MEAT	TEXTURED VEGETABLE PROTEIN (T V P)	WATER	
			Weights	Measures
1 lb.	11 oz.	2 oz.	3 oz.	3/8 c.
2 lb.	1 lb. 6 oz.	4 oz.	6 oz.	3/4 c.
3 lb.	2 lb. 2 oz.	6 oz.	9 oz.	1-1/8 c.
4 lb.	2 lb. 13 oz.	8 oz.	12 oz.	1-1/2 c.
5 lb.	3 lb. 8 oz.	10 oz.	14 oz.	1 3/4 c.
10 lb.	7 lb.	1 lb. 3 oz.	1 lb. 13 oz.	3-5/8 c.
20 lb.	14 lb.	2 lb. 6 oz.	3 lb. 10 oz.	1 qt. & 3-3/4 c.
25 lb.	17 lb. 8 oz.	3 lb.	4 lb. 8 oz.	2-1/4 qt.
30 lb.	21 lb.	3 lb. 10 oz.	5 lb. 6 oz.	2-3/4 qt.
35 lb.	24 lb. 8 oz.	4 lb. 3 oz.	6 lb. 5 oz.	3 qt. & 1/2 c.
40 lb.	28 lb.	4 lb. 13 oz.	7 lb. 3 oz.	3-1/2 qt.
45 lb.	31 lb. 8 oz.	5 lb. 6 oz.	8 lb. 2 oz.	1 gal.
50 lb.	35 lb.	6 lb.	9 lb.	1 gal. & 1 pint
55 lb.	38 lb. 8 oz.	6 lb. 10 oz.	9 lb. 14 oz.	1-1/4 gal.
60 lb.	42 lb.	7 lb. 3 oz.	10 lb. 13 oz.	1 gal. & 5-1/2 c.
65 lb.	45 lb. 8 oz.	7 lb. 13 oz.	11 lb. 11 oz.	1 gal. & 1-3/4 c.
70 lb.	49 lb.	8 lb. 6 oz.	12 lb. 10 oz.	1-1/2 gal. & 1 c.
75 lb.	52 lb. 8 oz.	9 lb.	13 lb. 8 oz.	1-1/2 gal. & 3 c.
90 lb.	56 lb.	9 lb. 10 oz.	14 lb. 6 oz.	1 gal. & 3 qt.
85 lb.	59 lb. 8 oz.	10 lb. 3 oz.	15 lb. 5 oz.	1 gal. & 3-1/2 qt.
90 lb.	63 lb.	10 lb. 13 oz.	16 lb. 3 oz.	2 gal.
95 lb.	66 lb. 8 oz.	11 lb. 6 oz.	17 lb. 2 oz.	2 gal. & 2 c.
100 lb.	70 lb.	12 lb.	18 lb.	2-1/4 gal.

Measurements occurring as fractions were rounded off.
To determine weights not shown in Column 1 add two or more lines equal to total weight together. i.e.

Total (Column 1)	Meat (Column 2)	T.V.P. (Column 3)	Water (Column 4)
50 lb. total =	35 lbs. meat +	6 lb. T.V.P. +	9 lb. water
100 lb. total =	70 lbs. meat +	12 lb. T.V.P. +	18 lb. water
2 lb. total =	1 lb. 6 oz. meat +	4 oz. T.V.P. +	6 oz. water
Result: 152 lb. total =	106 lb. 6 oz. meat +	18 lb + 4 oz. T.V.P. +	27 lb. 6 oz. water

---

TERMS AND ABBREVIATIONS

THE FOLLOWING IS A LIST OF TERMS FREQUENTLY USED IN RECIPES

BAKE: To cook by dry heat, usually in an oven.
BASTE: To moisten meat or other foods while cooking; to add flavor and prevent drying of the surface.
BATTER-DIP: To dip into a batter consisting of eggs, milk, flour, salt, leavening, and sometimes sugar.
BENCHING: Refers to the period when dough is allowed to rest after it has fermented and has reached sufficient volume to be shaped into loaves or rolls.
BLEND: To mix two or more ingredients thoroughly.
BOIL: To cook in a large amount of liquid, usually water, in which bubbles rise and break continuously on the surface.
BRAISE: To brown meat or vegetables in a small amount of fat and then cook slowly in a covered utensil in a small amount of liquid.
BREAD: To coat with bread crumbs or to dip food in liquid, usually an egg mixture, and then coat with bread crumbs.
CHOP: To cut food into fine pieces.
CREAM: To work one or more foods until soft and creamy.
CUT: To cut in or to incorporate fat into dry ingredients with little blending.
DICE: To cut into cubes.
DOCKING: To slice across top of a loaf (also pie crust) to allow gases to escape.
DREDGE: To sprinkle or coat with flour or other fine substance.
EQUIVALENT: Measured equally in value and can be interchanged.
FOLD: To combine ingredients by using two motions; cutting down through the mixture and turning over by sliding implement across the bottom of the mixing bowl with each turn.
GARNISH: An edible food used to decorate another.
GRADUATED: Measuring utensils marked to indicate varying amounts.
i.e.: Abbreviation for "that is."
INTERNAL: Inside (the temperature in the middle or thickest part of a mixture of food).
KNEAD: To manipulate with a pressing motion accompanied by folding and stretching.
LEVEL: An exact or even measure.
LEAVENING AGENT: Refers to the ingredient, such as yeast or baking powder that causes the product to rise.
MARINATE: To treat with a marinade (an oil-mixture which is usually a kind of salad dressing).
PALATABLE: Tasty, pleasing, acceptable.

PARBOIL: To boil until partially cooked.
PLUMP: To soak dried fruits in hot water for a short length of time.
PORTION: A specified measure or serving.
PORTION CONTROL: Using correct size scoop, spoon, cup, etc. to ensure uniform size and number of servings as called for in a recipe.
PROOF: To let rise (yeast breads).
RECIPE: Directions for preparing a certain food or dish.
RECONSTITUTE: To make again; restore to original state, usually with the addition of a liquid.
SAUTE: To brown quickly in a small amount of fat with frequent turning.
SCALD: To heat a liquid to just below the boiling point.
SEAR: To brown the surface of meat by a short application of intense heat used to develop flavor and improve appearance.
SIMMER: To cook in a liquid at a temperature above 185° F.—just below boiling. Bubbles form slowly and break just below the surface.
STEAM: To cook in steam with or without pressure. The steam may be applied directly to the food, as in a steamer or pressure cooker.
STEW: To simmer in a small quantity of liquid for a long period of time.
STIR: To mix food materials with a circular motion.
STOCK: A liquid in which meat and sometimes vegetables have been cooked.
THICKEN: To add eggs, flour, or other products to foods and cook until slightly firm. Gelatin, rennet or other products may be used with cold foods.
UNDILUTED: Full strength; nothing added.
VARIATION: To change the original product or recipe by adding another ingredient or changing shape, etc.
WHIP: To beat rapidly to increase volume by the incorporation of air.
YIELD: The amount produced which results in a definite number of servings or portions of a specified size.

APPROXIMATE WEIGHTS OF FRESH FRUITS AND VEGETABLES (Chart No. 8)

FOOD ITEM	UNIT	APPROX. NET WEIGHT—POUNDS	COMMON COUNT OF NUMBER PER UNIT
Apples	Box	48	88–138
Bananas	Box	40	3 per pound, medium
Cabbage	Sack	50–60	15 medium
Carrots	Sack	50	
Carrots, cello pack	Crate	48	1 pound package
Celery	Crate	45	24, 30, 36 stalks
Lettuce	Carton	40 to 50	24–30
Onions, dry	Sack	50	5 to the pound, medium
Onions, green	Crate	30	8 dozen bunches
Oranges	Box	40	Counts vary according to size
Potatoes	Sack	100	
Tomatoes	Lug	20 or 30	Counts vary according to size

TABLE OF WEIGHTS AND APPROXIMATE MEASURES (Chart No. 9)

FOOD	WEIGHT	APPROXIMATE MEASURE
All Spice	1 oz.	4½ tablespoons
Apples, AP	1 lb.	3 medium, 4½ cups diced
Baking Powder	1 oz.	2 tablespoons
Baking Powder	1 lb.	2 cups
Bananas, AP	1 lb.	3 medium, 2 to 2½ cups diced
Beans, dried, AP	1 lb.	2½ cups, 6 cups cooked
Beef, ground, raw	1 lb.	2 cups
Beef, cooked, diced	1 lb.	3 cups
Bread, crumbs, dry ground	1 lb.	4 cups
Bread, crumbs, soft	1 lb.	8 cups
Broccoli, frozen	1 lb.	2⅙ cups
Butter	1 lb.	2 cups
Cabbage, shredded EP, raw	1 lb.	1 quart (lightly packed)
Cabbage, AP, shredded, cooked	1 lb.	1½ cups
Carrots, diced	1 lb.	3 to 3¼ cups
Carrots	1 lb.	4 to 5 medium
Celery, diced EP	1 lb.	1 quart (1 to 2 bunches)
Celery Seed	1 oz.	4 tablespoons
Cheese, Cottage	1 lb.	2 cups
Cheese, grated or ground	1 lb.	1 quart
Chicken, cooked, cubed	1 lb.	3 cups
Chili Powder	1 oz.	4 tablespoons
Cinnamon, ground	1 oz.	4 tablespoons (1 pound equals 4 cups)
Chocolate	1 lb.	16 squares
Cloves, ground	1 oz.	5 tablespoons
Cocoa	1 lb.	4 cups
Coconut, shredded	1 lb.	6 to 7 cups
Cornmeal	1 lb.	3 cups
Cornstarch	1 oz.	3½ tablespoons (1 pound equals 3½ cups)
Crackers, Graham	1 lb.	58 to 66 crackers (6 cups of crumbs)
Crackers, 2 × 2 inches	1 lb.	108 crackers
Cracker Crumbs, medium fine	1 lb.	5 to 6 cups
Cranberries, raw	1 lb.	1 quart (cooked 1 quart)
Cranberries, sauce, jelled	1 lb.	2 cups
Cream of Tartar	1 oz.	3 tablespoons
Cucumbers, diced	1 lb.	3 cups
Dates, pitted	1 lb.	2½ cups
Eggs, hard cooked, chopped	1½ lb.	1 quart
Eggs, dried AP	1 lb.	5⅓ cups
Flour, all purpose	1 lb.	1 quart
Flour, whole wheat	1 lb.	3¾ cups
Gelatin, granulated	1 lb.	3 cups
Gelatin, granulated	1 oz.	3 tablespoons
Gelatin, prepared, flavored	1 lb.	2⅓ cups
Ginger, ground	1 oz.	5 tablespoons
Ham, cooked, diced	1 lb.	3 cups
Ham, 1 lb. AP, after cooking	8 oz.	1 cup cooked
Hominy Grits, raw	1 lb.	3 cups
Honey	1 lb.	1⅓ cups
Lard	1 lb.	2 cups
Lemon	1 lb.	4 large (1 cup of juice)
Lettuce, average head	9 oz.	1 head (1 pound = 6 to 8 cups shredded)
Macaroni, 1 inch pieces, AP	1 lb.	1 quart (2¼ quarts cooked)
Marshmallows	1 lb.	80
Meat, chopped, cooked	1 lb.	2 cups
Milk, nonfat, dry, non-instant	14 oz.	3 cups
Milk, nonfat, dry, instant	14 oz.	1 qt. 1⅓ cup

88

TABLE OF WEIGHTS AND APPROXIMATE MEASURES (Chart 9 Continued)

FOOD	WEIGHT	APPROXIMATE MEASURE
Mustard, ground, dry	1 lb.	4½ cups
Mustard, prepared	1 oz.	4 tablespoons
Noodles, dry, AP	1 lb.	6 cups (9 cups cooked)
Nutmeats	1 lb.	3½ cups
Nutmeg, ground	1 oz.	3½ tablespoons
Oats, rolled, AP	1 lb.	6 cups
Onions, AP	1 lb.	4 to 5 medium (2 to 3 cups chopped)
Onions, dehydrated, chopped	1 lb.	7½ cups
Oranges, size 72	1 lb.	2
Oranges, diced w/juice size 150	3 lb.	1 quart
Orange Juice, frozen concentrate	32 oz. can	1 gallon, reconstituted
Paprika	1 oz.	4 tablespoons
Peanut Butter	1 lb.	1¾ cups
Peaches, medium, AP	1 lb.	4 (sliced, canned, drained, 1 pound = 2 cups)
Peas, frozen	1 lb.	2⅔ cups, cooked
Peas, split, dried green	1 lb.	2¼ cups
Pears, fresh, AP	1 lb.	3 to 4
Peppers, green	1 lb.	7 to 9 medium
Peppers, ground	1 oz.	4 tablespoons (1 pound equals 4 cups)
Pickles, chopped	1 lb.	3 cups
Pimentos, chopped	1 lb.	2½ cups
Potatoes, white, medium, AP	1 lb.	3 potatoes (2 cups cooked)
Prunes, dried, AP, size 30–40	1 lb.	2½ cups (3 to 4 cups cooked)
Raisins, AP	1 lb.	3 cups (cooked 1 quart)
Rice, medium regular, AP	1 lb.	2¼ cups (cooked 2¼ quarts)
Salt	1 oz.	1½ tablespoons (1 pound = 1½ cups)
Shortening, compound	1 lb.	2¼ cups
Soda	1 oz.	2⅓ tablespoons (1 pound = 2⅓ cups)
Spaghetti, 2 inch pieces	1 lb.	5 cups (cooked 2½ quarts)
Spinach, raw	1 lb.	5 quarts lightly packed
Spinach, frozen	1 lb.	2 cups (slight)
Strawberries, AP	1 lb.	2¼ cups
Strawberries, frozen	1 lb.	1¾ cups
Sugar, brown, light pack	1 lb.	3 cups (solid pack 2 cups)
Sugar, granulated	1 lb.	2¼ cups (powdered 3 cups)
Tomatoes, fresh	1 lb.	3 to 4 medium
Turkey, AP, dressed weight	1 lb.	¾ cup cooked
Tuna	1 lb.	2 cups
Vanilla	1 oz.	2 tablespoons (8 ounces equal 1 cup)

YEAST: 1 pound compressed = 24 cakes
1 cake compressed = 1 package dry
1 pound dry = 2 pounds compressed
1 pound compressed = 2 cups
1 pound dry = 3 cups
(Dry yeast varies in weight according to brand used.)

CONVERSION TABLE FOR ACTIVE DRY YEAST (Chart No. 10)

Active Dry Packages	Measure	Warm Water (100–115 F.)
1 package	1 Tbsp.	¼ cup
4 packages	¼ cup	1 cup
8 packages	½ cup	2 cups
16 packages	1 cup	4 cups

APPROXIMATE SUBSTITUTION EQUIVALENTS (Chart No. 11)

BAKING POWDER:	1 teaspoon baking powder = ¼ teaspoon baking soda + ½ teaspoon cream of tartar
BRAN OR BREAD CRUMBS:	1½ cups crumbs = 1 cup flour
BUTTER OR MARGARINE:	1 stick butter or margarine (¼ lb.) = ½ cup
CAKE FLOUR:	1 quart cake flour = 3¾ cups all-purpose flour + ¼ cup cornstarch 1 cup cake flour = 1 cup less 2 tablespoons all-purpose flour + 2 tablespoons cornstarch 10 lb. cake flour = 8 lb. 7 oz. all-purpose flour + 1 lb. 9 oz. cornstarch
COCOA:	3½ tablespoons cocoa + ¾ tablespoon fat = 1 ounce or 1 square of chocolate
CORN MEAL:	⅞ cup cornmeal = 1 cup flour
CORNSTARCH:	1 tablespoon cornstarch = 2 tablespoons flour
CREAM:	1 cup whipping cream = 2 cups or more after whipping
DRIED EGG:	Refer to Chart No. 13 entitled "Conversion Table for Cooking With Dried Eggs"
HONEY:	1 cup honey = 1¼ cups sugar + ¼ cup liquid
MILK, BUTTERMILK:	½ cup commercial buttermilk + 1 quart of reconstituted non-fat dry milk = 1⅛ quart buttermilk (Refer to USDA Recipe Card A-10)
MILK, NONFAT, DRY, NON-INSTANT:	¾ cups dry milk + 3¾ cups water = 1 quart liquid milk Refer to USDA Recipe Card A-10
MILK, NONFAT, DRY INSTANT:	1⅓ cups dry milk + 3¾ cups water = 1 quart liquid milk Refer to USDA Recipe Card A-10
MILK, SOUR:	1 cup sweet milk + 1 tablespoon lemon juice or vinegar = approximately one cup sour milk
ROLLED OATS:	1 cup rolled oats = 1 cup flour
THICKENING:	1 tablespoon quick-cooking tapioca = 1 tablespoon cornstarch or 1⅓ to 1½ tablespoons flour ¾ tablespoon cornstarch = 1 tablespoon cake flour for thickening

SUBSTITUTION EQUIVALENTS USING DEHYDRATED VEGETABLES FOR SEASONING (Chart No. 12)

DRY VEGETABLES FOR SEASONING	
Celery Flakes	Use 1 oz. dry in place of 11.3 oz. (2⅔ cups) fresh, chopped celery
Onions, chopped, minced	Use 1 oz. dry in place of 9.1 oz. (1½ cups) fresh, chopped onion
Parsley Flakes	Use 1 oz. dry in place of 2.9 oz. (4 cups) fresh, chopped parsley
Pepper, green, red, mixed	Use 1 oz. dry in place of 8.8 oz. (1⅔ cups) fresh, chopped pepper

CONVERSION TABLE FOR COOKING WITH DRIED EGGS (Chart No. 13)

Dried whole eggs are eggs which have been taken out of the shell and have had most of the water removed. When using dried eggs in cooking, it is necessary to put back the water that was taken away during drying.

PROPORTIONS FOR RECONSTITUTING DRIED WHOLE EGGS

Dried Whole Eggs +	Water =	Shell Egg Equivalents (Large Size)
2⅔ Tbsp. (½ oz.)	2⅔ Tbsp.	1
⅓ cup (1 oz.)	⅓ cup	2
½ cup (1½ oz.)	½ cup	3
⅔ cup (2 oz.)	⅔ cup	4
¾ cup (2½ oz.)	¾ cup	5
1 cup (3 oz.)	1 cup	6
1 cup + 2½ Tbsp. (3½ oz.)	1 cup + 2½ Tbsp.	7
1⅓ cups (4 oz.)	1⅓ cups	8
1½ cups (4½ oz.)	1½ cups	9
1⅔ cups (5 oz.)	1⅔ cups	10
1¾ cups (5½ oz.)	1¾ cups	11
2 cups (6 oz.)	2 cups	12
1 qt. (12 oz.)	1 qt.	24
1½ qt. (1 lb. 2 oz.)	1½ qt.	36
2 qt. (1 lb. 8 oz.)	2 qt.	48
2½ qt. (1 lb. 14 oz.)	2½ qt	60

Measures and Terms (Chart No. 14)

SUBSTITUTING CAN SIZES

1 No. 10 can = 5 No. 2 cans
1 No. 10 can = 4 No. 2½ cans
1 No. 10 can = 2 No. 3 cylinders
1 No. 10 can = 6 No. 303 cans

TERMS COMMONLY USED TO DESCRIBE OVEN TEMPERATURES

Temperature	Term
250–275 F.	Very Slow
300–325 F.	Slow
350–375 F.	Moderate
400–425 F.	Hot
450–475 F.	Very Hot
500–525 F.	Extremely Hot

EQUIVALENT MEASURES

3 tsp. = 1 Tbsp.
2 Tbsp. = ⅛ cup
4 Tbsp = ¼ cup
5⅓ Tbsp. = ⅓ cup
8 Tbsp. = ½ cup
10¾ Tbsp. = ⅔ cup
12 Tbsp. = ¾ cup
16 Tbsp. = 1 cup
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
2 gallons = 1 peck
4 pecks = 1 bushel

ABBREVIATIONS

tsp.	teaspoon
Tbsp.	tablespoon
lb.	pound
c.	cup
pt.	pint
qt.	quart
gal.	gallon
oz.	ounce
EP	edible portion
AP	as purchased
wt.	weight
pkg.	package
No.	number
°F.	degrees Fahrenheit
°C.	degrees Celsius

DIPPER MEASUREMENTS

Number	Measure	Number of Tablespoons
6	⅔ cup	10⅔
8	½ cup	8
12	⅓ cup	5⅓
16	¼ cup	4
20	3⅕ Tbsp.	–
24	2⅔ Tbsp.	–
30	2⅕ Tbsp.	–
40	1⅗ Tbsp.	–

LADLE MEASUREMENTS

Size	Measure
1 ounce	⅛ cup
2 ounce	¼ cup
4 ounces	½ cup
6 ounces	¾ cup
8 ounces	1 cup

WEIGHTS, MEASURES, AND SIZES OF CANS (Chart No. 15)

Contents of Cans: Fruits and Vegetables

SIZE OF CAN	AVERAGE NET WEIGHT PER CAN	APPROXIMATE CUPS PER CAN
No. 303	16–17 oz.	2 cups
No. 2	1 lb. 4 oz.	2½ cups
No. 2½	1 lb. 13 oz.	3½ cups
No. 3 (cylinder) (46 oz.)	2 lb. 14 oz.	5¾ cups
No. 10	6 lb. 9 oz.	12 cups (3 quarts)

For additional information on can content of specific items, refer to:
USDA Food Buying Guide for School Food Service, PA 1257.

PAN CAPACITY CHART (Chart No. 16)

PAN	FILL	DEPTH	QUARTS	½ CUP PORTIONS	¼ CUP PORTIONS
10" × 20"	within 1" of top within 1½" of top within 2" of top	2" 4" 6"	6 10 15	48 80 120	96 160 240
½ Size	within 1" of top within 1" of top within 1¼" of top	2" 4" 6"	3 6 9	24 48 72	48 96 144
¼ Size	within 1" of top within 1" of top within 1¼" of top	2" 4" 6"	1½ 2½ 3¾	12 20 30	24 40 60
⅓ Size	within 1" of top within 1" of top within 1¼" of top	2" 4" 6"	2 3½ 5	16 28 40	32 56 80

X. THE METRIC SYSTEM

A. Within the next few years, the school food service manager may be faced with conversion to the metric system of measurement. Instead of the varying units that the current system has, 12 inches to the foot, 3 feet to the yard, and 1760 yards to the mile, there may be a shift to the simpler, more logical metric system that is based on units of ten.

B. The metric system is a decimal system, very much like the current United States money system. Therefore, the money system will not be changed in the conversion to metrics.

1. Liquid volume will be measured in liters instead of fluid ounces, pints, quarts, and gallons.
2. The temperature scale will change from the Fahrenheit scale to the Celsius scale, which is the same scale as centigrade.
3. Length will be measured in meters instead of inches, feet, and yards.
4. Weight measures, such as ounces and pounds, will be replaced with grams.

C. When the metric system comes into full use, school food service managers and employees will use gram, liter, and meter measurement and Celsius Scale extensively. Plans are underway to revise the school feeding program aids (menu planning guide, recipes, etc.) to incorporate metric measurement. Although conversion will take several years, we should all be encouraged to start thinking metric.

D. The names of the metric base units are unfamiliar to the ear at first but fortunately, there are only a few words that have to be learned for everyday use:

1. The three major base units of metric measurement are easy to remember if the following word associations are used.
   a. "Jump a meter."
   b. "Pour a liter."
   c. "Weigh a gram."
2. The metric system is based on the decimal system; the prefixes and abbreviations are listed below.

COMMON PREFIXES (to be used with basic units)

Milli: one-thousandth (0.001)	1000 millimeters = 1 meter
Centi: one-hundredth (0.01)	1000 centimeters = 10 meters
Kilo: one-thousand times (1000)	1000 meters = 1 kilometer

ABBREVIATIONS

Liter	(l)	Millimeter	(mm)
Milliliter	(ml)	Gram	(g)
Centimeter	(cm)	Kilogram	(kg)
Meter	(m)	Milligram	(mg)

E. The following list of common units may be helpful to the school food service worker.

Common Units of Weight

1 gram	= 0.035 ounces
1 kilogram	= 2.21 pounds
1 ounce	= 28.35 grams
1 pound	= 453.59 grams
1 kilogram	= 1000 grams
1 gram	= 1000 milligram

Common Units of Volume

1 quart	= 2 pints = 946.4 milliliters
1 pint	= 2 cups = 473.2 milliliters
1 cup	= 16 tablespoons = 8 fluid oz.
	= 236.6 milliliters
1 tablespoon	= 3 teaspoons = ½ fluid oz.
	= 14.8 milliliters
1 teaspoon	= 4.9 milliliters
1 liter	= 1000 milliliters = 1.06 quarts

F. To convert the Fahrenheit or Celsius scales mathematically

If measure is in	*Multiply by*	*To Find*
Fahrenheit	Subtract 32; then multiply by 5/9	Celsius or Centigrade
Celsius	Multiply by 9/5 then add 32	Fahrenheit

G. The following tables* may be helpful as a guide for food service employees:

Conversion Table for Units of Weight

1 oz = 0.06 lb = 28.35 g	1 lb = 0.454 kg	1 g = 0.035 oz	1 kg = 2.205 lb
2 oz = 0.12 lb = 56.70 g	2 lb = 0.91 kg	2 g = 0.07 oz	2 kg = 4.41 lb
3 oz = 0.19 lb = 85.05 g	3 lb = 1.36 kg	3 g = 0.11 oz	3 kg = 6.61 lb
4 oz = 0.25 lb = 113.40 g	4 lb = 1.81 kg	4 g = 0.14 oz	4 kg = 8.82 lb
5 oz = 0.31 lb = 141.75 g	5 lb = 2.27 kg	5 g = 0.18 oz	5 kg = 11.02 lb
6 oz = 0.38 lb = 170.10 g	6 lb = 2.72 kg	6 g = 0.21 oz	6 kg = 13.23 lb
7 oz = 0.44 lb = 198.45 g	7 lb = 3.18 kg	7 g = 0.25 oz	7 kg = 15.43 lb
8 oz = 0.50 lb = 226.80 g	8 lb = 3.63 kg	8 g = 0.28 oz	8 kg = 17.64 lb
9 oz = 0.56 lb = 255.15 g	9 lb = 4.08 kg	9 g = 0.32 oz	9 kg = 19.84 lb
10 oz = 0.62 lb = 283.50 g	10 lb = 4.54 kg	10 g = 0.35 oz	10 kg = 22.05 lb
11 oz = 0.69 lb = 311.85 g	11 lb = 4.99 kg	11 g = 0.39 oz	11 kg = 24.26 lb
12 oz = 0.75 lb = 340.20 g	12 lb = 5.44 kg	12 g = 0.42 oz	12 kg = 26.46 lb
13 oz = 0.81 lb = 368.55 g	13 lb = 5.90 kg	13 g = 0.46 oz	13 kg = 28.67 lb
14 oz = 0.88 lb = 396.90 g	14 lb = 6.35 kg	14 g = 0.49 oz	14 kg = 30.87 lb
15 oz = 0.94 lb = 425.25 g	15 lb = 6.81 kg	15 g = 0.53 oz	15 kg = 33.08 lb
16 oz = 1.00 lb = 453.59 g	16 lb = 7.26 kg	16 g = 0.56 oz	16 kg = 35.28 lb

---

*Information provided by the American Home Economics Association, 2010 Massachusetts Ave., N.W., Washington, D.C. 20036

Conversion Table for Units of Liquid Measure:

1 fl. oz. = 29.573 ml
2 fl. oz. = 59.15 ml
3 fl. oz. = 88.72 ml
4 fl. oz. = 118.30 ml
5 fl. oz. = 147.87 ml
6 fl. oz. = 177.44 ml
7 fl. oz. = 207.02 ml
8 fl. oz. = 236.59 ml
9 fl. oz. = 266.16 ml
10 fl. oz. = 295.73 ml

1 l = 1.057 qt.
2 l = 2.11 qt.
3 l = 3.17 qt.
4 l = 4.23 qt.
5 l = 5.28 qt.
6 l = 6.34 qt.
7 l = 7.40 qt.
8 l = 8.45 qt.
9 l = 9.51 qt.
10 l = 10.57 qt.

1 qt. = 0.946 l
2 qt. = 1.89 l
3 qt. = 2.84 l
4 qt. = 3.79 l
5 qt. = 4.73 l
6 qt. = 5.68 l
7 qt. = 6.62 l
8 qt. = 7.57 l
9 qt. = 8.52 l
10 qt. = 9.46 l

1 l = 0.264 gal.
2 l = 0.53 gal.
3 l = 0.79 gal.
4 l = 1.06 gal.
5 l = 1.32 gal.
6 l = 1.59 gal.
7 l = 1.85 gal.
8 l = 2.11 gal.
9 l = 2.38 gal.
10 l = 2.64 gal.

1 gal = 3.785 l
2 gal = 7.57 l
3 gal = 11.36 l
4 gal = 15.14 l
5 gal = 18.93 l
6 gal = 22.71 l
7 gal = 26.50 l
8 gal = 30.28 l
9 gal = 34.07 l
10 gal = 37.85 l

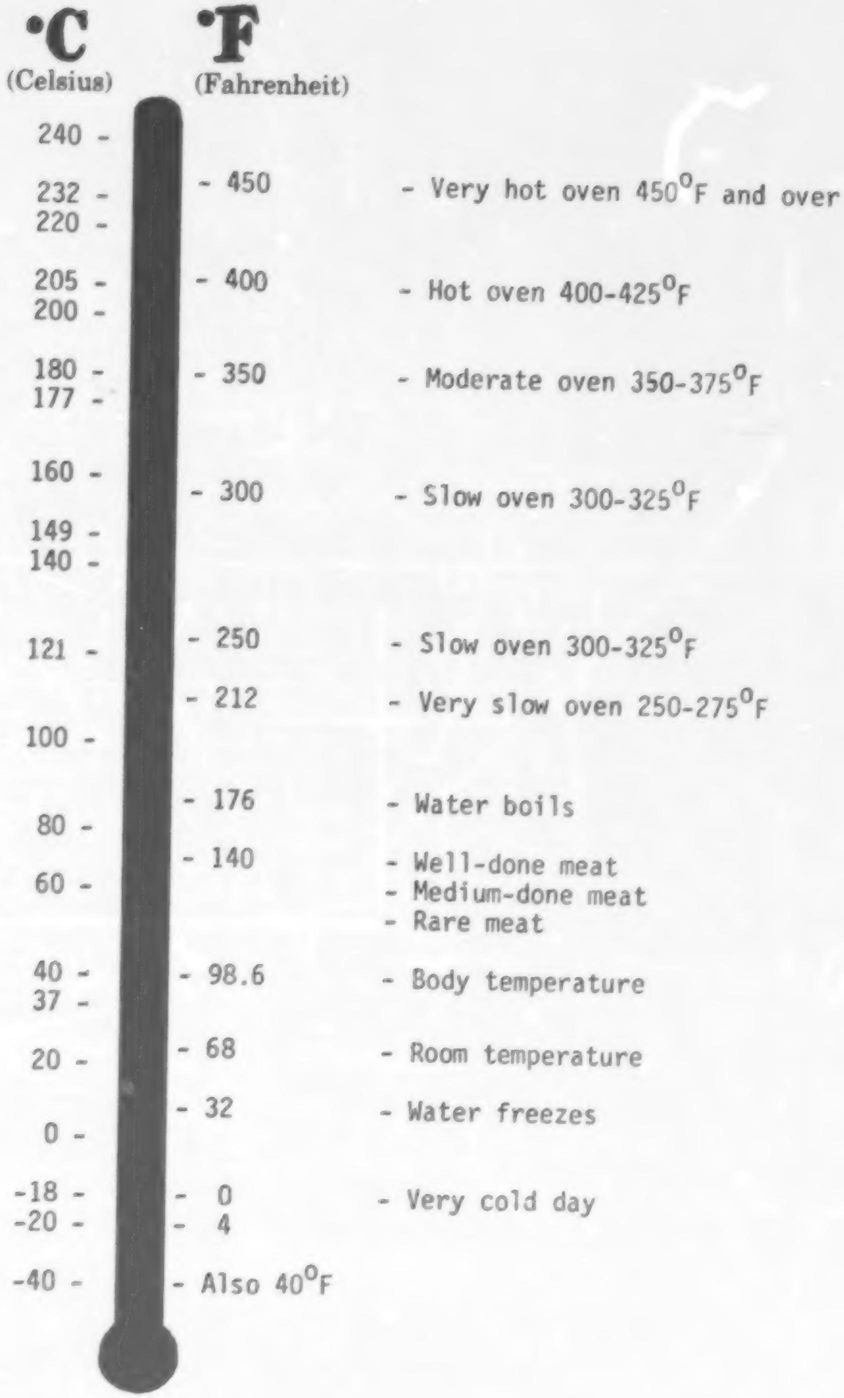
1 ml = 0.034 fl. oz.
2 ml = 0.07 fl. oz
3 ml = 0.10 fl. oz.
4 ml = 0.14 fl. oz.
5 ml = 0.17 fl. oz.
6 ml = 0.20 fl. oz.
7 ml = 0.24 fl. oz.
8 ml = 0.27 fl. oz.
9 ml = 0.30 fl. oz.
10 ml = 0.34 fl. oz.

Conversion Table for Changing Celsius (Centigrade) Temperature Readings to Fahrenheit Temperature Readings:

Degrees Celsius	Line B 0	1	2	3	4	5	6	7	8	9
Column A										
-2	-4°F	-6°F	-8°F	-9°F	-11°F	-13°F	-15°F	-17°F	-18°F	-20°F
-1	14°F	12°F	10°F	9°F	7°F	5°F	3°F	1°F	0°F	-2°F
-0	32°F	30°F	28°F	27°F	25°F	23°F	21°F	19°F	18°F	16°F
0	32°F	34°F	36°F	37°F	39°F	41°F	43°F	45°F	46°F	48°F
1	50°F	52°F	54°F	55°F	57°F	59°F	61°F	63°F	64°F	66°F
2	68°F	70°F	72°F	73°F	75°F	77°F	79°F	81°F	82°F	84°F
3	86°F	88°F	90°F	91°F	93°F	95°F	97°F	99°F	100°F	102°F
4	104°F	106°F	108°F	109°F	111°F	113°F	115°F	117°F	118°F	120°F
5	122°F	124°F	126°F	127°F	129°F	131°F	133°F	135°F	136°F	138°F
6	140°F	142°F	144°F	145°F	147°F	149°F	151°F	153°F	154°F	156°F
7	158°F	160°F	162°F	163°F	165°F	167°F	169°F	171°F	172°F	174°F
8	176°F	178°F	180°F	181°F	183°F	185°F	187°F	189°F	190°F	192°F
9	194°F	196°F	198°F	199°F	201°F	203°F	205°F	207°F	208°F	210°F
10	212°F	214°F	216°F	217°F	219°F	221°F	223°F	225°F	226°F	228°F
11	230°F	232°F	234°F	235°F	237°F	239°F	241°F	243°F	244°F	246°F
12	248°F	250°F	252°F	253°F	255°F	257°F	259°F	261°F	262°F	264°F
13	266°F	268°F	270°F	271°F	273°F	275°F	277°F	279°F	280°F	282°F
14	284°F	286°F	288°F	289°F	291°F	293°F	295°F	297°F	298°F	300°F
15	302°F	304°F	306°F	307°F	309°F	311°F	313°F	315°F	316°F	318°F
16	320°F	322°F	324°F	325°F	327°F	329°F	331°F	333°F	334°F	336°F
17	338°F	340°F	342°F	343°F	345°F	347°F	349°F	351°F	352°F	354°F
18	356°F	358°F	360°F	361°F	363°F	365°F	367°F	369°F	370°F	372°F
19	374°F	376°F	378°F	379°F	381°F	383°F	385°F	387°F	388°F	390°F
20	392°F	394°F	396°F	397°F	399°F	401°F	403°F	405°F	406°F	408°F
21	410°F	412°F	414°F	415°F	417°F	419°F	421°F	423°F	424°F	426°F
22	428°F	430°F	432°F	433°F	435°F	437°F	439°F	441°F	442°F	444°F
23	446°F	448°F	450°F	451°F	453°F	455°F	457°F	459°F	460°F	462°F
24	464°F	466°F	468°F	469°F	471°F	473°F	475°F	477°F	478°F	480°F
25	482°F	484°F	486°F	487°F	489°F	491°F	493°F	495°F	496°F	498°F
26	500°F	502°F	504°F	505°F	507°F	509°F	511°F	513°F	514°F	516°F

The numbers along the side (column A) and top of the scale (line B) reflect degrees Celsius (Centigrade). The remaining columns in the body of the chart are Fahrenheit readings. At the top of the chart (line B) find the last digit in the number being converted from Celsius. Locate the remaining digit or digits of the numbers being converted in the left hand column and move across to the corresponding column under the number of the last digit. The degree where the two columns meet equals the degree Fahrenheit.

Approximate Temperatures—Degrees Celsius vs Fahrenheit


°C
(Celsius)
°F
(Fahrenheit)
240 -
232 -
220 -
- 450
- Very hot oven 450°F and over
205 -
200 -
- 400
- Hot oven 400-425°F
180 -
177 -
- 350
- Moderate oven 350-375°F
160 -
- 300
- Slow oven 300-325°F
149 -
140 -
121 -
- 250
- Slow oven 300-325°F
- 212
- Very slow oven 250-275°F
100 -
- 176
- Water boils
80 -
- 140
- Well-done meat
60 -
- Medium-done meat
- Rare meat
40 -
37 -
- 98.6
- Body temperature
20 -
- 68
- Room temperature
- 32
- Water freezes
0 -
-18 -
- 0
- Very cold day
-20 -
- 4
-40 -
- Also 40°F

SECTION III
QUANTITY FOOD PREPARATION

Page

I. Skill in Cooking is an Art 95
II. Consistent Steps Are Necessary for Quality Food 95
III. Serve the Food Attractively 96
IV. Methods of Cooking Meat 96
V. Storage, Care and Preparation of Meat 98
VI. Storage, Care and Preparation of Poultry 99
VII. Storage, Care and Preparation of Fish 100
VIII. Storage, Care and Preparation of Cheese 100
IX. Preparing Food with Non-Fat Dry Milk 100
X. Vegetable Preparation 101
XI. Salad Preparation 104
XII. Fruit Preparation 105
XIII. Steam Cookery 105
XIV. Baking 106
XV. Preparation of Cakes and Cookies 110
XVI. Pastry 112
XVII. Serving the School Meals 113
XVIII. New Methods of Service 114
XIX. Merchandising 114
    Managers Merchandising Checklist (Sample No. 1) 118

QUANTITY FOOD PREPARATION

I. SKILL IN COOKING IS AN ART

A. This skill can be learned if one is interested.
B. Whether cooking in large or small quantities, the goals are:
  1. To make food look and taste good.
  2. To conserve food and nutritive value.
  3. To avoid plate waste.

II. CONSISTENT STEPS ARE NECESSARY FOR QUALITY FOOD

A. Select and purchase quality foods.
B. Use standardized recipes.
  1. Checking the ingredients on the standardized quantity recipe will:
    a. Determine what ingredients are available.
    b. Assist the food service worker to purchase other foods needed.
    c. Provide correct quantity calculations for:
      (1) Ingredients that have some preparation loss or gain before they are ready to be used in recipes.
      (2) Canned or frozen foods that are purchased in common institutional market units.
  2. Recipes are calculated to show how much food is required to provide quantities needed for 100 portions.
  3. Provide information on yield to ensure the USDA Meal Pattern requirements are met.
  4. For additional information see:
    a. Marketing guide on back of USDA Recipe Cards. (All references to USDA Recipes are from USDA Quantity Recipes, PA–631, Revised August, 1971.)
    b. USDA Food Buying Guide For School Food Service, PA 1257.
C. Follow standardized quantity recipes carefully.
  1. To increase acceptability of food.
  2. To prepare a good product and the same number of portions consistently.
  3. To control food costs.
  4. To save time and energy.
D. Use proper equipment; weigh or measure accurately with standard equipment.
  1. Use standard dry measures for measuring dry ingredients and standard liquid measures for liquid ingredients.
  2. Use scales for weighing dry ingredients.
  3. Use largest measure possible, such as a gallon instead of four quarts.
  4. Avoid the use of tea cups or spoons designed for table service.
  5. Use proper mixing utensils; avoid use of hands.
  6. Provide tasting spoon for sampling.
  7. When possible, select pans for cooking that may be used on the serving line.
  8. Follow directions and use correct pan size as stated in the recipe.
E. Use sound food preparation practices and cook food according to directions on the recipe.
  1. Select and study a tested recipe.
  2. Purchase quality food.
  3. Weigh or measure ingredients with correct equipment.
  4. Read and follow directions precisely.
  5. Learn and use methods to:
    a. Conserve nutritive values.

        - b. Retain volume and flavor.
        - c. Retain original appearance and color.

    6. Retain maximum nutritive value by:

        - a. Leaving food in as large pieces as possible when cooking.
        - b. Cooking quickly in a covered container.
        - c. Cooking in a minimum amount of water.
        - d. Cooking only until tender to avoid excessive loss of vitamin C.
        - e. Preparing foods only in quantity needed to avoid loss of nutritive value from reheating leftovers.

III. SERVE THE FOOD ATTRACTIVELY

A. Serve hot foods hot and cold foods cold.
B. Serve in an attractive atmosphere.

IV. METHODS OF COOKING MEAT

A. Dry heat

1. Roasting or baking is a method of cooking with dry heat. The term "roasting" refers to cooking meats in the oven, in an uncovered pan, with no moisture added.

    - a. Do not add water, do not cover.
    - b. Salt should be added after browning is completed. Salt penetrates only ¼ to ½ inch and, if applied before cooking, tends to draw the juices to the surface causing the browning to be delayed.
    - c. Roast in preheated oven. Maintain a low (275° F to 300° F) oven temperature throughout the cooking period. A slightly higher temperature is recommended for fresh pork.
    - d. Searing does not hold in the juices.
    - e. With a meat thermometer, the exact degree of doneness can be determined. Insert the thermometer in the smallest piece of meat. When the desired doneness is reached, remove the piece from the oven and insert thermometer in the next smallest piece, etc.
    - f. Meat slices better if allowed to remain at room temperature 15 minutes after removing from the heat. The juice is absorbed and the meat is firmer for slicing. The meat looks and tastes better.
    - g. DO NOT PARTIALLY COOK ANY MEAT ONE DAY AND FINISH THE NEXT DAY.

NOTE: For additional information see USDA Recipe Card D-6.

2. Ovenizing or oven frying.

    - a. Meats are placed on well-greased baking sheets and placed in the oven to fry.
    - b. Fats may be brushed or drizzled onto the food in addition to greasing the pan.
    - c. Ovenizing is used to cook a larger quantity of food than can be pan fried.

3. Other methods of dry heat not widely used in school kitchens are:

    - a. Barbecuing (meat served in barbecue sauce is not barbecuing).
    - b. Broiling.
    - c. Pan broiling.
    - d. Pan frying.

4. Deep fat frying.

    - a. Equipment for deep fat frying:
        - (1) Commercial deep fat fryer.
        - (2) Tilting braising pan.
    - b. Controlling factors affecting the quality of fried food:

99

(1) Keep a uniform and controlled temperature.
(2) Use fat with a high melting point intended for a deep fat fryer.
(3) Heat fat to desired temperature before adding food.
(4) Keep frying oil clean:

(a) Strain fat frequently to remove sediment.
(b) Keep fryer clean. Wash thoroughly and rinse well. Detergent remaining in fryer after washing will cause fat to break down.

c. Standards for deep fat fried products include:

(1) Uniform doneness throughout product.
(2) Golden brown crust.
(3) Minimum absorption of fat.

d. Poor quality and probable causes.

(1) Soggy product: Cooking product in fat below recommended temperature.
(2) Uneven brownness: Overloading baskets.
(3) Unevenly cooked: Cooking product in fat above recommended temperature.
(4) Excessive fat absorption:

(a) Overloaded baskets.
(b) Cold food cooked at too low temperature.
(c) Rich batter or dough.
(d) Large surface area.
(e) Excessive leavening in batter or dough.
(f) Rough surfaces.
(g) Poor quality fat.
(h) Poor handling of fat.

(5) Unsatisfactory flavor:

(a) Excessive heat.
(b) Detergent remaining in fryer after washing.
(c) Old fat or deteriorated fat.

e. Problems with cooking oil.

(1) Objectionable smoke:

(a) Temperature too high.
(b) Failure to strain fat.
(c) Old fat.

(2) Excessive foaming:

(a) Failure to strain fat.
(b) Deteriorated fat.
(c) Extremely cold foods added to hot fat.
(d) Too much egg in crumb or batter.
(e) Frying temperature too low.

(3) Fat bubbles over:

(a) Too much fat in fryer.
(b) Overloading.
(c) Excess moisture in food.

B. Moist heat

1. Braising is perhaps the most common method of cooking with moist heat. A small amount of water is used. The meat may be browned, lightly browned, or not browned.

a. The meat may or may not be rolled in flour. It is usually browned on all sides in a small quantity of fat in a heavy utensil.

b. Season after browning; or if dredged, add seasonings to the flour.
c. Cooking must be done in container with tight fitting lid to confine the steam.
d. Braised dishes may be cooked in their own juices; or if more liquid is needed, use water, tomato, fruit, or vegetable juices, sour cream, etc. As liquid cooks away, more may be added. This will form a savory brown gravy.
e. Cook LOW and SLOW.

NOTE: For additional information refer to USDA Recipe Card D–4.

2. Cooking in liquid is recommended for large, less-tender cuts of meat. Meat for stews must be cut in small pieces. Meats are simmered and not boiled.

a. Simmering is cooking in a large quantity of liquid. To simmer, bring water to a boil, add the product, cover, and keep the temperature below the boiling point at about 190° F. (Bubbles form but collapse before they reach the surface.)
b. Stewing is cooking in a small amount of liquid. The liquid is usually thickened and served with the meat and/or vegetables.

(1) Meat may or may not be browned in its own or additional fat.
(2) Add salt and other seasonings. Avoid heavy seasoning as the stock may be reduced for use later.
(3) Cover with liquid, cover kettle, cook below boiling point until tender. Use water, stock or broth, juices or milk, etc.
(4) If vegetables are to be added, add just long enough before serving to be tender. DO NOT OVERCOOK. Vegetables may need to be added at various times depending on the time it takes them to cook.

NOTE: For additional information see USDA Recipe Card D–9.

V. STORAGE, CARE AND PREPARATION OF MEAT.

A. Storage, care and preparation of beef, pork, veal, and lamb.

1. Shrinkage in meat can be controlled by:

a. Using low cooking temperatures. Browning is done gradually. (Searing does *not* hold in meat juices. It increases evaporation and some loss of weight.)
b. Cooking only to the desired degree of doneness; not overcooking.
c. Using the meat thermometer to remove guesswork on the degree of doneness.

2. Controlling shrinkage in meat is important because:

a. The appearance is better.
b. The nutritional value after cooking is greater.
c. The product is easier to slice.
d. The juiciness, tenderness, and flavor are improved.
e. The drippings are more usable than the excessively large amount of burned drippings from meat cooked at high temperature.
f. The loss of usable product costs money through decreased number of servings.

3. *Always cook meat at a low temperature.* This rule applies to all methods of meat cookery.

NOTE: The next few pages are meant only to be general guides in the procedure of successfully preparing meats and other goods according to the methods most commonly used in school food service programs. They are not meant to be used in place of specific recipes.

B. Storage and care of frozen meats.

1. Frozen meat must be kept frozen at 0° F. or below until removed from storage for thawing and cooking. Frozen meat must be properly handled during thawing, preparation, cooking, and serving to avoid spoilage or food poisoning.
2. Directions for thawing.

a. For best quality, schedule thawing so that meat will be cooked soon after it is thawed. The *only* acceptable methods for thawing meat are:
   - (1) Under refrigeration.
   - (2) Under cold continuously running water.
   - (3) Cooking while frozen.

b. Remove from carton and thaw in original wrappings in refrigerator (35° F–40° F).

c. Space blocks or packages of meat on refrigerator shelves so that air can circulate around them.
   - (1) Allow 1½ hours per pound of meat for thawing 12 to 15 pound blocks of ground meat in the refrigerator.
   - (2) Use cooking timetables on USDA Recipe Cards D–4, D–5, and D–6 for cooking thawed meat.

VI. STORAGE, CARE AND PREPARATION OF POULTRY.

Raw poultry is highly perishable. Freshness is essential to a good quality cooked product. Sanitary handling and proper storage of uncooked and cooked poultry are of the utmost importance to safety as well as its appetite appeal and flavor.

A. Care of fresh poultry.

1. Storage time should not be more than two days. Hold uncooked poultry at a refrigeration temperature of 34° F. to 38° F. (40° F is too high). This will preserve the original quality and guard against spoilage and possible food poisoning (fresh or frozen).
2. Cool leftover cooked meat as RAPIDLY as possible by placing on sheet pans covered lightly and place in the refrigerator. After cooling, wrap closely or place in shallow containers (not more than two inches deep) with tight lids. Refrigerate at 34° F. to 38° F. and use WITHIN TWO DAYS for safety and before dryness and loss of flavor occurs.
3. Stuffing poultry is not recommended for quantity cookery. Bake the stuffing separately.
4. Cool broth RAPIDLY in separate shallow container. Do not hold longer than two days. Bring to a full rolling boil before it is used.

NOTE: For additonal information refer to USDA Recipe Cards D–7, D–8, and D–9.

B. Frozen poultry.

1. It is recommended that poultry be defrosted before cooking. Once thawed, it should be cooked exactly like fresh poultry.
2. To avoid loss of juice, cooking should be started while poultry is still very cold.

C. Thawing poultry.

1. Store but do not thaw USDA donated poultry in shipping containers.
2. Frozen poultry must be kept frozen hard at 0° F. or below until removed from storage for thawing and cooking.
3. DO NOT THAW AT ROOM TEMPERATURE—DO NOT THAW IN WARM WATER—DO NOT REFREEZE.
4. To thaw turkey, leave in the original wrapper and place on a sheet pan and store in the refrigerator so the air can circulate around it. As soon as the turkey is thawed, clean and wash thoroughly under cold running water. Drain, wash giblets. If the turkey and giblets are not cooked at once, cover and refrigerate.
5. COOK POULTRY WITHIN 24 HOURS AFTER THAWING.

NOTE: For additional information refer to USDA Recipe Card D–7.

D. Cooking poultry.

1. Choice of cooking methods depends on the age and size of the bird. Also, the amount of fat present is a determining factor in the method of cooking.
   - a. Dry heat: broiling, frying, roasting, ovenizing.
   - b. Moist heat: braising, stewing, simmering, steaming.

2. The recommended methods of cooking poultry for school food service programs are:
   a. Roasting.
   b. Ovenizing.
   c. Steaming.
   d. Stewing.

NOTE: For additional information refer to USDA Recipe Cards D–8 and D–9. Also, refer to the fact sheet distributed with the USDA donated poultry.

VII. STORAGE, CARE, AND PREPARATION OF FISH.

A. Care of fresh fish.

1. Fish is very perishable and should always be kept under refrigeration.
2. Fresh fish should be kept constantly below 40° F. and preferably 31° F.–32° F.
3. Rough handling should be avoided because bruises and punctures of the flesh induce and hasten breakdown of quality.

B. Care of frozen fish.

1. Fish usually is, but need not be, completely thawed before cooking. Pieces which are frozen together, such as fillets, should be thawed enough to separate.
2. Thaw fish under refrigeration. DO NOT THAW AT ROOM TEMPERATURE OR IN WARM WATER. DO NOT REFREEZE.
3. Cook immediately after thawing.

C. Cooking fish.

1. Fish may be cooked by any of the basic cooking methods. The method used should be determined by the fat content of the fish and that varies with the species.
2. Fish have very little connective tissue and are VERY OFTEN OVERCOOKED. Just enough cooking to enable the flesh to be easily flaked from the bones will leave the fish moist, tender, and bring out the delicate flavor.

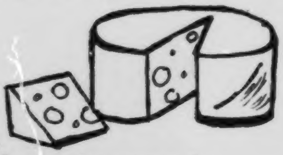
NOTE: For additional information refer to USDA Recipe Card D–10.

VIII. STORAGE, CARE AND PREPARATION OF CHEESE.

A. Care of cheese.

1. Store in refrigerator at 32° F.–40° F.
2. Store away from strong-flavored foods and products having strong odors (cheese absorbs flavors).
3. Cheddar cheese stored at room temperature causes rapid aging and encourages the development of mold.

B. Cheese cookery



1. *Use low temperature*
   a. Cooking at a high temperature makes cheese tough and stringy.
   b. High temperatures may also cause the butterfat and protein of cheese to separate.
   c. The low temperature rule is important whether the cheese is baked, broiled, or cooked on top of the range.
2. A hard dry cheese blends better if grated and moistened with warm milk or soaked in buttermilk. Grated pieces may be added to salads, salad dressing, vegetables, or casserole dishes.
3. If cheese sauce curdles, remove from heat and beat.

IX. PREPARING FOODS WITH NON-FAT DRY MILK.

A. Definition: A product known as "non-fat dry milk" is produced when fat and water are removed from milk.

1. Properties of non-fat dry milk:
   a. Nutrient content is about the same as fluid skim milk.
   b. It is easy to use and convenient to store.
   c. It may be used in place of fluid milk in food preparation when reconstituted.
2. Reconstituted milk should be handled as fresh milk.

NON-FAT
DRY
MILK

B. Non-fat dry milk usage.

1. Dry form.
   a. Mix non-fat dry milk with dry ingredients in recipe.
   b. Add water for reconstituting in place of the fluid milk specified.
2. Liquid form.
   a. Since milk scorches easily, keep the heat low and do not boil.
   b. May be quickly soured by adding ¼ cup vinegar to one quart of reconstituted milk.
   c. Make buttermilk by adding ½ cup commercial buttermilk to one quart of reconstituted non-fat dry milk. Refer to USDA Recipe Card A-10.
   d. Does not have to be scalded for use in yeast breads.
3. To ensure uniform successful results with recipes:
   a. Weigh rather than measure.
   b. If necessary to measure, prevent packing by:
      (1) Stirring with a spoon.
      (2) Lifting lightly into measuring utensils.
      (3) Sifting if non-fat dry milk is lumpy.
4. Reconstitute with lukewarm water.
   a. Sprinkle dry milk on warm water and mix with:
      (1) Whip.
      (2) Rotary beater.
      (3) Power mixer.
   b. Never add dry form to boiling water unless it is being used in a dry mix.

C. When using non-fat dry milk.

1. For scalloped potatoes, blend non-fat dry milk with flour, salt, and pepper; add water in the amount needed to reconstitute. The dry mix method helps to prevent curdling.
2. Prevent formation of film on milk during heating by:
   a. Covering the pan.
   b. Adding a small piece of butter.
   c. Beating during the heating time.
3. To whip non-fat dry milk, beat equal amounts of the powder and ice water into stiff peaks. This can be used for fruit toppings, frozen and chiffon desserts, and salads with fluffy fruit dressings.
   a. Instant dry milk can be sprinkled over partially set gelatin and whipped into stiff peaks.
   b. The non-fat dry milk can also be whipped separately and then folded into partially set gelatin.
   c. Whipped non-fat dry milk can make a unique contribution to delicate whipped desserts in various fruit and chocolate flavors. (See instructions in individual recipes.)

X. VEGETABLE PREPARATION.

A. Vegetables are important in the diet because they contain:

1. Vitamins.
2. Minerals.
3. Bulk.
4. Fiber.

B. A school can serve high quality vegetables that are:

1. Appetizing.
2. High in nutrients.
3. Low in cost.

C. Fresh vegetables.

1. Selection: Fresh vegetables are perishable; if not purchased while in their prime, there will be losses of flavor, food value, and attractiveness. These losses become greater as the holding time is increased. Vegetables should be fresh, crisp or firm, tender, and bright in color.
2. Pre-preparation steps: To prepare some vegetables for cooking; washing, paring, trimming, cutting, shaping, soaking, or other procedures may be required. Firm fresh vegetables can lose quality rapidly after harvesting; but they will have less chance to deteriorate if cleaned properly.
    a. Vigorous scrubbing may be required to produce clean vegetables.
    b. Soaking may assist in loosening soil; if the surface is unbroken, little loss will occur.
    c. Adding one tablespoon of salt per gallon of water assists in loosening some soil. Some vegetables, such as cabbage, cauliflower, broccoli, brussels sprouts, and others may contain tiny mites. Soaking one-half hour in cold salted water will encourage them to leave the vegetable.
3. Freshening vegetables: Food loss can be prevented if workers handle the vegetables correctly.
    a. Many times freshening vegetables in cold or iced water may reduce waste.
    b. Vegetables or parts of vegetables that are not suitable for serving fresh may be utilized in soup or as seasoning.
    c. Using the proper tools and observing proper peeling techniques can reduce loss from waste.

NOTE: For additional pre-preparation procedures, refer to USDA Recipe Card J–2.

4. Preparation.
    a. Remove as thin a layer as possible of the vegetable skin.
    b. Bake, boil, or steam with the skin left on the vegetables whenever possible.

D. Canned vegetables.

1. Canned vegetables may be used satisfactorily when time prohibits or availability of fresh vegetables is difficult. Two advantages are:
    a. Canned vegetables permit variety at any time of the year.
    b. Canned vegetables help maintain food costs within the budget.

CORN
GREEN BEANS

2. Canned vegetables *are already cooked* and require only seasoning and heating in about half of their own liquid.
    a. Prepare just before serving. Loss of quality results if prepared too far in advance.
    b. Careless preparation of canned vegetables has caused much of the criticism directed at vegetables served in school lunch. Adequate preparation can do much to make these vegetables more popular. To prepare canned vegetables follow these steps:
        (1) Pour off half of the liquid; use for soups, gravies, and sauces.
        (2) Heat vegetables and remaining liquid *only long enough to bring to serving temperature.* Season to taste.

c. The following combinations or garnishes are good for canned vegetables:

(1) Beets flavored with orange juice.
(2) Brussels sprouts with celery or tomato sauce with grated cheese.
(3) Carrots combined with finely chopped parsley.
(4) Peas or green beans combined with cauliflower for color contrast.
(5) Corn combined with lima beans, kidney beans, or zucchini squash.
(6) Spinach may have shredded cheese or hard cooked eggs added.
(7) Tomatoes combined with green pepper or olives for flavor.
(8) Turnips combined with peas for contrast in color and flavor.
(9) Sweet potatoes with orange juice glaze.

NOTE: For additional information on the preparation of canned vegetables, see USDA Recipe Card J–5.

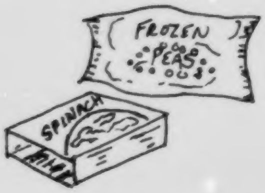
E. Frozen vegetables.

1. Normally frozen vegetables should always be cooked.

a. Vegetables that are tightly packed, such as spinach, should be thawed until they can be easily separated.
b. Loosely packed vegetables, such as peas or corn, need not be thawed before cooking.

2. Frozen vegetables may be cooked:

a. In a steamer.
b. In a steam-jacketed kettle.
c. In a tilting braising pan.
d. On top of the range.
e. In the oven.



3. The amount of water needed depends on the:

a. Vegetables to be cooked.
b. Method of cooking.
c. Utensils used.

4. The approximate time for cooking frozen vegetables:

a. Is about half as long as for fresh vegetables.
b. Will vary with the quality of the vegetable and the degree of thawing.

5. Serve vegetables soon after they are cooked. It is the long holding periods that cause vegetables to lose many of their good qualities.
6. Points to remember in cooking frozen vegetables are:

a. Use a minimum amount of water (refer to instructions on the wrapper).
b. Water should be boiling when vegetables are added.
c. Less salt is usually required for frozen vegetables.
d. Long periods of thawing impairs the flavor and texture of frozen vegetables.
e. Count cooking time from the moment the water returns to boiling point after the frozen vegetables have been added.
f. Cook only until tender.
g. Watch carefully to avoid overcooking.
h. If available, cook vegetable in a steamer.
i. Steam tables should not be used for cooking.

NOTE: For additional information on the preparation of frozen vegetables, see USDA Recipe Card J–6.

F. Dried vegetables

1. Some dried, dehydrated, or freeze-dried vegetables are available on the market.

a. Most require soaking before cooking.
b. Use *lukewarm or cool* water. Hot water is used only when recommended.

    (1) Soak a minimum of 20–30 minutes.
    (2) Overnight soaking produces higher yields.

2. Follow manufacturer's recommendations carefully.

XI. SALAD PREPARATION

A. Contributions of salad to the meal.

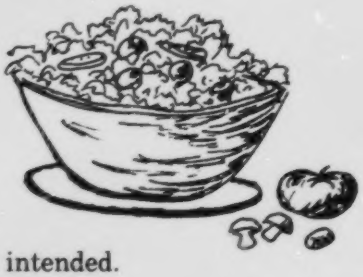
1. Supply eye and taste appeal by providing variations through color, flavor, contrasting texture, temperature, arrangement, and combination of ingredients.
2. Nutritive value is enhanced.
3. Can contribute to meat/meat alternate requirement when meat, fish, cheese, or eggs are used.

B. Salads usually consist of:

1. Cold foods, either raw or cooked.
2. Various combinations, including some foods for tartness and a crunchy texture.
3. Variety of suitable foods which differ with both season and locality.

C. Variations and combinations are almost unlimited.

1. Proportions may be adjusted according to the local taste and the foods available.
2. Offers many possibilities for the economical use of leftovers that have been properly refrigerated.



D. Salads are composed of:

1. Base—Usually a salad green.
2. Body—The main part of the salad.
    a. May be almost any type of mixture.
    b. Usually depends upon the purpose for which the salad is intended.
        (1) Main dish; fish, meat, cheese, or eggs.
        (2) An accompaniment; primarily green vegetables.
        (3) Dessert salad; jello with fruit or juice.
3. Dressing adds to the taste of the salad because of its distinctive flavor.
4. Garnishes, which should be edible, add to the attractiveness of the salad.

E. General suggestions for salad area and salad making:

1. The area in which salads are made should be arranged conveniently close to sinks and refrigerated units with good table space and the necessary utensils and tools.
2. Ingredients and tools should be gathered before starting salad.
3. Salad greens should be carefully washed and blotted dry. This may be done in preparation time the day before being used. All salad greens should be fresh, crisp, and cold.
4. Salad greens, such as lettuce or spinach, should be shredded or torn for a combination salad. Dressing should be added *just before serving or served separately*.
5. Cutting or shredding is usually preferable for firm vegetables, such as cabbage and carrots.
6. Pieces should be large enough to keep their identity but small enough to eat easily.
7. Remember that the French knife, electric chopper, or vertical cutter mixer are time savers.
    a. A cutting surface should be used.
    b. Never cut anything in the hand that can be cut on a cutting surface.

NOTE: For additional information and suggested combinations, refer to Oklahoma and USDA Recipe Cards in Section E.

XII. FRUIT PREPARATION

A. Fresh fruits.

1. Increase the nutritive value of the meal.
2. Add variety.
3. Greatly enhance the color, flavor, and texture of the meal.
4. May be served whole, halved, or in pieces.

B. Prevent discoloration of cut or peeled fruits such as peaches, apples, and bananas.

1. Dip into a solution containing a small quantity of ascorbic acid, lemon juice, pineapple juice, or commercial preparations.
2. Sugar added to some fruits prevents discoloration.
3. Using stainless steel helps to avoid discoloration from iron salts.

C. Canned or cooked fruits are also nutritious and appetizing.

1. May be purchased in various concentrations of syrup.
2. When cooking fresh fruits, care should be taken to retain color, shape, and flavor.
3. Points to remember:
   a. Do not boil rapidly.
   b. Do not over cook.

D. Dried fruits.

1. May be stewed and served as a dessert.
2. Can be prepared by washing in cold water, draining, and covering with boiling water.
3. May also be soaked and simmered until tender.
4. Should not be cooked rapidly.

NOTE: For additional information and cooking schedules on dried fruits, see USDA Recipe Card C–1.

E. Frozen fruits.

1. If frozen fruits are to be cooked, thaw just enough for ease of handling.
2. Frozen fruit, partially thawed, may be substituted for fresh fruit without change in recipe, except allowance for the sugar.
3. Frozen fruits often contain added sugar. "Three by one" on the package indicates that three parts by weight of fruit to one part by weight of sugar was used.
4. Dry pack indicates fruits may be packed without sugar.

F. Procedures to follow when using frozen fruit for pies or cobblers.

1. Thaw under refrigeration in original container.
2. Drain off juice (except apple and rhubarb), mix with water, and bring to boiling point.
3. Add cornstarch (or flour), which has been made into a thin paste, to juice stirring constantly with a wire whip; add sugar, if needed, heat until dissolved.
4. Cook until thick and clear.
5. Add fruit. Heat only enough to heat fruit thoroughly.

XIII. STEAM COOKERY

A. Popularity of steam cookery is increasing in many school food service programs because of:

1. Speed.
   a. Steaming is quicker than other methods. Steaming starts instantaneously with opening of the compartment steam valves.
   b. The usual loss of time necessary for bringing water to the boiling point and to resume boiling after food has been immersed is eliminated.

2. Superior way of retaining:
    - a. Appearance.
    - b. Flavor.
    - c. Nutrients.
        - (1) Steam cooking does not disturb or surround food with circulating liquid.
        - (2) More protein, calcium, and iron are retained.
        - (3) Vitamins are more consistently preserved than in other methods of preparation.

3. Ease and convenience of operation.
    - a. Steam cooking eliminates handling a large array of utensils.
    - b. Steam cooking eliminates constant watching to prevent boiling over or scorching.
    - c. Steam baskets or containers never require scouring due to burned on food.
    - d. Food can be steamed in counter pans and transferred directly to serving stations.

4. Quality of finished product.
    - a. Steam cooking eliminates dried out texture and reduces loss by evaporation.
    - b. Firmer texture; more solid, attractive appearance is achieved with steam cooking.

B. The following suggestions will help to obtain good results when cooking with steam.

1. Very little water is needed.
2. Vegetables, such as potatoes, should be graded for size before cooking to assure uniform servings and equal cooking time.
3. Peel thick-skinned vegetables as thinly as possible. Valuable nutrients are just under the skin.
4. Slice long-root vegetables lengthwise. Cutting crosswise causes important food components to drain out more readily during cooking.
5. Vegetables should be seasoned after steaming.
6. Thaw or cut into 1¼ to 2 inch cubes solid-pack frozen vegetables. Peas, corn, succotash, or mixed vegetables need not be thawed.
7. The most prevalent mistake encountered in steam cookery is over cooking. Vegetables should be cooked slightly under the "done" state (slightly crisp but tender).

C. Cooking times vary according to:

1. Type of steamer used. Pressure steamers are slightly faster than free-venting types.
2. Amount of steam pressure available.
3. The age and size of the vegetables.
4. The type of container used.
    - a. Food cooks faster in shallow pans than in deep ones.
    - b. Perforated pans are slightly faster than the solid pans.

D. Follow the instructions provided by the manufacturer for each steamer.

NOTE: For timetables on steaming fresh, canned, and frozen vegetables, refer to USDA Recipe Cards J–4, J–5, and J–6. For timetables on steaming chicken or turkey, refer to USDA Recipe Card D–9.

XIV. BAKING

A. Bread baking

1. Contributes to meal by adding interest and nutritive value.
2. Classifications.
    - a. Yeast bread is leavened with yeast.
    - b. Quick bread is leavened with baking powder or baking soda. Variations are:
        - (1) Biscuits.
        - (2) Muffins.
        - (3) Pan breads, such as corn bread.

B. Yeast breads.

1. The type, amount, and treatment of the various ingredients influence the finished product of a yeast bread.

    a. Flour: For bread making, a hard-wheat or bread flour is preferable to a soft-wheat pastry flour. The recipes in the Oklahoma and USDA Recipe Files have been designed to use ALL PURPOSE enriched flour, which is a blend of hard and soft wheat (USDA donated flour is an all-purpose flour).
    b. Liquid: Milk or water is the usual liquid used for bread making. It is usually recommended that milk be scalded and cooled to 85° F. before adding yeast. The USDA donated non-fat dry milk may be added dry with the flour and no scalding is necessary.
    c. Yeast: Yeast, used for leavening the dough, is available in two forms. Compressed yeast must be refrigerated. When used, it is added to warm water (85° F.). The active dry form is usually softened in slightly warmer water (100°–115° F.). The bowl used should be the same temperature.

        (1) Add yeast to the water; do not add water to yeast.
        (2) Add the measured amount of active dry yeast to the water; allow to soak 10 minutes while weighing or measuring other ingredients, then stir until dissolved.

NOTE: Remember to subtract the dissolving water from that shown in the recipe. During the process of fermentation, yeast produces carbon-dioxide, which serves as the leavening agent. The type and amount used may be determined by the time available for bread making. Yeast is a plant which grows rapidly in the presence of moisture, food, and favorable temperature. If dough becomes too hot, yeast cells will be killed; and if it is too cold, the reaction will be retarded. For additional information refer to "Recipe Section II" of this handbook and to the "USDA Food Buying Guide for School Food Service PA 1257."

    d. Salt: Salt improves flavor, retards growth of undesirable organisms, and slows or controls the fermentation process.
    e. Sugar: Yeast feeds upon sugar. The flavor of bread is improved, growth of yeast is accelerated, and the appearance of the loaf is improved by the use of sugar.
    f. Fat: The addition of fat improves flavor, texture, and appearance of crumb and crust of the loaf. A higher percentage of fat improves the keeping quality.
    g. Additional ingredients, such as eggs, dried fruit and nuts, may be added to the dough according to the type of bread desired.

2. Steps in preparing yeast breads.

    a. Assemble equipment and ingredients (temperature of ingredients affects time required to make breads).
    b. Dissolve yeast in warm water; stir after 10 minutes.
    c. Add softened shortening and dry ingredients (flour, dry milk, sugar and salt).
    d. Mix on low speed with dough hook until dough is smooth and elastic (15 to 20 minutes). Knead well, if mixing by hand.
    e. Shape dough into ball and place in greased container. Cover with a clean cloth and let rise until volume has doubled.
    f. Punch down, portion, weigh, let rest 15 minutes, and shape into loaves or rolls.
    g. Let rise in a warm place until double in volume.
    h. Bake at temperature recommended in the recipe.
    i. Remove from oven and butter, if desired.

3. Standards for loaf bread and rolls.

    a. Exterior.

        (1) Shape—Symmetrical with smooth, slightly rounded top, loaves free from cracks and bulges.

      (2) Size—Large for weight.
      (3) Crust—Moderately thin and crisp, uniformly golden brown.
      (4) Aroma—Fresh, pleasing.

   b. Interior.

      (1) Flavor—Fresh, nutty, pleasing, bland.
      (2) Color—Creamy white.
      (3) Texture—Moderately fine, even grain, thin walled cells (loaves may have a finer texture).
      (4) Crumb—Moist, tender, soft and elastic (bread should not crumble when sliced).

4. Poor quality in yeast breads and possible causes.

   a. Too much volume—Too much yeast, too little salt, over proofing, oven temperature too low.
   b. Too little volume—Flour may be too old or too new, over or under mixing (gluten should be developed), too little yeast or improper handling, too much salt, oven temperature too high.
   c. Flavor flat—too little salt.
   d. Off flavor—Improperly stored ingredients may absorb other flavors.
   e. Dark or gray colored crumb—Over fermentation, temperature of dough too high, oven temperature too cool.
   f. Dark streaks—Improper mixing, dough too thin or too stiff, use of excessive oil or dusting flour.
   g. Undesirable texture—High sugar content or too much yeast, too little shortening, dough allowed to rise too much, liquid temperature too high, temperature too high during proofing, improper proportions of ingredients.
   h. Poor shape of bread or rolls—Improper shaping or panning.
   i. Poor quality crust (thick and hard)—Low fat, sugar, or milk content; improper mixing, proofing, or baking.
   j. Tough—Improper fermentation or proofing time, temperature of oven too low.
   k. Too dark—Baked too long or oven too hot, excessive sugar or milk, too little proofing, too little fermentation.
   l. Too light or dull—Cool oven, use of too much dusting flour, ingredients not properly portioned, too much fermentation and proofing.

C. Quick breads.

1. Ingredients are the same for quick breads as for yeast breads except for the leavening agents.
2. Chemical leavening agents: Baking powder or baking soda is used in quick breads.

   a. Double acting baking powder is considered desirable for quantity cookery and is activated when liquid is added and heat is applied.
   b. Baking soda plus an acid, such as sour milk, is used as a leavening agent.

      (1) Baking soda is now so finely ground it is no longer necessary to add the soda to the liquid before adding to the dry ingredients.
      (2) Old recipes should be revised to combine baking soda with the dry ingredients.
      (3) Baking soda is activated as soon as moisture is added.

3. Quick breads are classified by method of mixing.

   a. Muffin method:
   It is important to observe proper mixing rules in making muffins. For best results, the combined liquid ingredients should be added to the combined dry ingredients and mixed with as few strokes as possible. Mix only until dry ingredients are wet. The batter will be rough and lumpy. The batter is also thick. It is easy to overmix, thus developing gluten that results in a tough product. The muffins should be dipped from the side of the container to prevent further mixing of the batter.

b. Biscuit method:
The shortening is cut into the dry ingredients for biscuits, the liquid is then added and is mixed on low speed until a soft dough is formed. Remove to a floured board and knead lightly (15 to 20 turns) for about 30 seconds. The dough should be soft and springy. It should be rolled one-half the desired thickness when baked. For a good-shaped biscuit, cut straight down. Place biscuits on baking sheet. This method is also sometimes referred to as the "Pastry Method."

4. Quick breads.

a. Standards for muffins:

(1) Muffins should be large for their weight with a rounded top.
(2) The crust is crispy, shiny, pebbly, and golden brown in color.
(3) The crumb is moist, tender, light, even-grained, with no tunnels.
(4) The crumb is creamy white in color with a delicate flavor.

b. Poor quality muffins and possible causes:

(1) Heavy—Over mixing, mixing too slowly, oven temperature too low, too much flour, too little leavening.
(2) Thick crust—Too much grease in pan, baked too long, oven too hot.
(3) Toughness, tunnels, peaked top—Over mixing.
(4) Dry texture—Too much flour, over baked.
(5) Crumbly, greasy—Too much fat.

c. Standards for biscuits:

(1) Good biscuits will be twice the thickness of rolled dough.
(2) Symmetrical in shape.
(3) Uniform in size.
(4) Evenly browned with a fairly smooth level top.
(5) The crumb will be uniformly creamy white, moist, tender, even-textured, light and flaky with a delicate flavor.

d. Poor quality in biscuits and possible causes:

(1) Heavy—Over mixed or over kneaded, oven temperature too low, too much flour or liquid, too little fat or leavening.
(2) Crust too light—Baking pan too deep, too much flour, oven temperature too low.
(3) Poor shape—Dough unevenly rolled, poor cutting and panning.
(4) Poor volume—Too little leavening agent, oven not hot enough.
(5) Lack flakiness—Shortening and flour mixture mixed too fine or too little kneading.
(6) Tough—Over mixing or too little fat.
(7) Hard crust—Over baked.

e. Standards for cornbread:

(1) Good flavor.
(2) Tender.
(3) Golden brown crust with a rough surface, well raised and even.
(4) Free from cracks and tunnels.
(5) Even and medium-fine texture, moist and tender crumb.

f. Poor quality in corn bread and possible causes:

(1) Runs over edge of pan—Pan filled too full.
(2) Cracks in crust, batter pushed up—Oven too hot or placed too high in the oven.
(3) Depth of product uneven—Pans or oven not level; heat may be uneven.
(4) Coarseness—Improper proportion of ingredients.
(5) Tough corn bread—Too little shortening or over mixing.

NOTE: Cornbread is a pan bread. The batter should be thin enough to pour. Ingredients should be at room temperature to mix. The dry and liquid ingredients are combined and mixed just enough to moisten. Bake in hot oven.

XV. PREPARATION OF CAKES AND COOKIES

A. Cakes and cookies are popular desserts. Children like them and they are well suited to quantity food production. These products are high in starch and sugar, but also supply protein (eggs) and sometimes fruit. They are energy-producing foods.

1. Cakes fall into two classes:
   - a. *Sponge cakes* are those made without fat which are leavened by incorporating air into the beaten eggs. The mixing method is referred to as the sponge cake method.
   - b. *Butter cakes* are those made with fat and leavened with baking powder or soda. They are most often baked in sheets, layers, or cup cakes. Variations of butter cakes include plain cake with frosting or fruit sauce, cakes containing fruits and upside-down cake.
2. Mixing methods for butter cakes include:
   - a. *Muffin.*
     - (1) Combine dry ingredients.
     - (2) Combine liquid ingredients and add to dry ingredients with as little mixing as possible.
   - b. *One bowl*: Combine all ingredients in bowl and mix in one operation.
   - c. *Conventional.*
     - (1) Cream fat and sugar together.
     - (2) Add eggs.
     - (3) Add dry ingredients alternately with liquid.
3. Cookies are made from a stiffer batter or dough which includes: bars, drop cookies, squares, rolled and cut cookies, and refrigerator cookies.
   - a. Cookies may be dipped with a No. 40 dipper or an appropriate size for the type of cookies being made.
   - b. Rolls of cookie dough may be sliced on the meat slicer if sufficiently chilled.
   - c. Avoid over baking.
   - d. Remove from baking sheet as soon as they are baked.
   - e. Make cookies in large amounts and refrigerate or freeze until needed. Flavor may deteriorate with long periods of storage.

B. When cakes or cookies are on the menu oven time and space must be allotted for their preparation.

C. Essential for good cake baking are:

1. Good quality ingredients.
2. Properly balanced formula or a good recipe.
3. Correct temperature of ingredients.
4. Accurate measurements.
5. Controlled mixing of ingredients.
6. Proper relation of batter to pan.
7. Correct oven temperature and baking time.

D. For the conventional method of mixing cakes:

1. Ingredients should be at room temperature (75° F.–80° F.).
2. Avoid adding cold eggs to the butter-sugar mixture as this may cause curdling.
3. Warm eggs mixed with a bit of the dry mix will prevent curdling.
4. Chocolate, if used, should be added during the creaming period.
5. Cocoa should be added to the flour.

E. Carefully mix the cake according to the method of the recipe.

   1. Grease and flour only the bottom of the pan.
   2. Weigh or measure the desired amount of batter for each pan.
   3. Spread batter to the edges evenly.
   4. Lift the pan eight to ten inches above the table and drop to release air bubbles and to help provide an even texture.
   5. Place in the oven carefully to keep batter even in the pan.

F. Butter cake.

   1. Standards for butter cake:

      a. Even on all sides, perfectly shaped, slightly rounded on the top.
      b. Good volume.
      c. Crust is smooth, thin, tender, slightly crisp, and golden in color.
      d. The cut surface has fine, even grain; is tender, soft, light, and smooth to the touch.
      e. Crumb is moist and tender.
      f. Color varies according to the kind of cake.
      g. Flavor is delicate, sweet, and rich.

   2. Poor quality in butter cakes and possible causes are:

      a. Sugary crust—too much sugar, improper method of mixing.
      b. Sticky crust—too much sugar, damp flour, insufficient baking.
      c. Uneven browning—uneven oven heat, lack of leavening, incorrect placement in oven.
      d. Uneven shape—uneven oven heat, unlevel racks, batter not level, pan warped.
      e. Falls or is hollow in the center—Too thin a batter, too much sugar, too much fat, too slow an oven, too much leavening, insufficient baking.
      f. Coarse texture—Ingredients not properly combined, insufficient mixing, too much sugar, too much leavening, incorrect oven temperature.
      g. Crumbly—Too much sugar, too much leavening, too much fat.
      h. Heavy—Too much mixing, lack of leavening, too much fat, too much liquid, too much flour, insufficient baking, incorrect temperature.
      i. Peaked—Too much mixing. lack of leavening, too hot an oven at the start of baking period, too much flour.
      j. Tunnels and large holes—Too much mixing, uneven distribution of leavening agent, failure to expel air from the batter when put in pan.
      k. Tough—Too much mixing, lack of shortening, lack of leavening, lack of sugar, too much flour.
      l. Poor flavor—Ingredients of poor quality, too much baking powder.
      m. Cracks on top—Too hot an oven at the start of baking period, batter too stiff.
      n. Sogginess—pan width out of proportion to depth and length, steaming during cooking, wrong proportion of liquid to flour.
      o. Dry—Not enough fat, not enough liquid, egg whites beaten too much, over baked, addition of chocolate with no increase in liquid or decrease in flour, too much beating, not enough sugar.
      p. Grayish—Oven temperature too low, low grade of flour.

G. Poor quality in cookies and possible causes:

   1. Cookies are too stiff or hard—Too much flour, over baking.
   2. Cookies are too soft—Too much liquid, too much sugar (sugar melts and increases liquid), too much fat (this increases the proportion of liquid).
   3. Cookie dough crumbles—The fat required for all rich dough makes it very short and likely to split or crumble when rolled. Dough may be too cold.
   4. Cookies spread in pan—Greasing the pan too heavily, too much soda or baking powder, undissolved sugar (as undissolved sugar melts the cookie spreads).

XVI. PASTRY

A. Pastry which is used for pies and cobblers is a stiff unsweetened dough made from flour, fat, water and salt.

1. Standards for pastry: A good pastry is light, crisp, tender, not crumbly, and a golden brown color. It may be flaky, semi-flaky, or mealy depending on the type of crust.

a. Flakiness is determined by the amount of water and the method of mixing. The appearance on the surface is rough and blistery depending on flakiness.
b. Tenderness depends on the kind and proportion of ingredients.

2. Ingredients.

a. Fat: The firm plastic fats commonly used in cooking (lard and shortening) are more desirable for pastry.

(1) The moisture present in butter or margarine develops the gluten in the flour making a tough pastry.
(2) The general proportions of fat are ¼ to ⅓ cup fat to 1 cup flour. By weight, approximately two pounds of fat to three pounds of flour.
(3) Tenderness is increased with a larger proportion of fat.

b. Flour: All-purpose flour is very good for a flaky crust. Pastry flour produces a more tender, less flaky crust that is harder to handle.
c. Salt: Salt adds flavor and may be added to either the flour or the water.
d. Water: Unless otherwise specified, cold water is used for pastry. (40° F. or below).

(1) The amount of water used depends on the temperature and texture of the fat-flour mixture.
(2) Mix as little as possible after water is added; use only enough water to hold the mass together.
(3) Too little water makes a crumbly mass that is hard to manage; too much water causes toughness.

B. Quality of pastry may be affected by:

1. Proportions of ingredients.
2. Handling or manipulation of the dough during the rolling or mixing period.
3. Baking temperature or time.

C. Poor quality in pastry products and possible causes:

1. Crust shrinks—Not enough shortening, too much water, dough mixed too much, dough stretched too much when placed in the pan, oven temperature too low.
2. Crust tough—Too much water, dough mixed too much, too little shortening, too much flour on rolling board.
3. Blistered pastry shell—Pastry not pricked enough, oven temperature too low, pastry fitted into pans too tightly.
4. Soggy undercrust—Oven temperature too low, pastry rolled too thick, not enough bottom heat, pie under baked, filling too thin, too much filling.
5. Pies stick to pan—Pans wet, new pans, filling boils over, oven unevenly heated.
6. Fruit filling boils over—Oven too hot, oven too cold, too much filling, crusts not properly sealed, no holes in top crust.
7. Custard-type pies curdle or crack—Over baked, not enough moisture, too much flour or starch, too many eggs.
8. Lemon or cream pies crack—Too much starch in filling, too many eggs in the filling, filling lacks fat.
9. Off flavor in filling—Improperly stored, poor quality product, use of too much cornstarch.
10. Fillings break down—Too much acid in filling, cooling too slowly, filling not stirred during cooking.
11. Filling tastes flat or insipid—Lack of salt, lack of acid in fruit.

12. Filling has poor color—Too much thickening, poor quality fruit, fruit oxidized due to exposure to air.
13. Meringue breaks down—Moisture in egg white, whites under whipped, filling too thin, insufficient sugar, not baked enough, pies stored in closed container.
14. Meringue shrinks—Sugar added too soon, oven too hot, meringue does not touch crust all the way around, cooling in a draft.

XVII. SERVING THE SCHOOL MEALS

The final step in successful quantity food preparation is the serving of the food to the customer.

A. Factors which affect the child's appetite:

1. Pleasant and well-groomed workers.
2. The appearance of the food on the serving counter.
3. The way in which the food is served.

B. Having everything in order at serving time will make the lunch period easier for the workers and will speed up serving.

1. Have the lunch ready to serve on time to avoid interference with school schedules.
2. Work schedules should allow workers time for lunch or a break before serving thereby improving the efficiency and attitude of servers.
3. Workers should take time for personal "tidying up" before serving.
    a. A clean uniform with apron removed or a clean apron for serving.
    b. A hair net.
    c. Clean hands and nails.
4. Have the kitchen in order and cooking utensils washed and put away before serving time.
5. Set up the unit for receiving the soiled dishes and trays.
6. Arrange serving counter so that children may conveniently pick up items such as:
    a. Flatware from dispensers that expose only the handles.
    b. Straws wrapped or from sanitary dispensers.
    c. Paper napkins from dispensers.
    d. Milk from the milk box.
    e. Any pre-portioned components of the meal.
7. Set up the serving counter five to ten minutes before the students arrive.
    a. Check to see that each dish has the appropriate serving tool.
    b. Have extra food ready to bring to the serving counter for refills.
    c. Have a person designated to keep the counter supplied (back up person).
8. Be prepared to keep hot foods *HOT* and cold foods *COLD*.
9. Plan arrangement of food on the plate in advance. *DO NOT* fill trays before the children come through the line.
10. Sample plates should be selected at random. Cover and freeze for future reference if needed for analysis. Dispose of sample plates after saving for five days.

C. Serving the food.

After the preparations have been completed and serving begins, remember to be pleasant, friendly, and courteous to the children and to fellow workers. Attitudes of the workers at serving time greatly influence the children. The following are some points that may be of help in achieving excellence in serving the food:

1. Workers should avoid objectionable mannerisms.
    a. Touching hair or face while serving.
    b. Tasting food at counter.
    c. Licking fingers.

    d. Using handkerchiefs.
    e. Putting fingers on eating surface of plate.

2. Develop skills and techniques that make rapid serving possible.
    a. Learn how to do each detail of work with fewest possible motions.
    b. Never dip twice for one serving of food.
    c. If possible, serve with both hands.
    d. Never handle food with hands.
    e. Start the serving line with the fastest working employee.
3. Avoid having one food run into another. Although speed is important in serving; attractive plates are more appealing to students.
4. All persons, children and adults, should be served the same complete meal.
    a. Adjust portions to the age of the child according to USDA regulations.
    b. Choice menus and offer vs serve provide an opportunity for individual preferences.
5. Serve all foods from the counter instead of having plates and bowls of such foods as bread, butter, and peanut butter on tables for children to help themselves.
6. *Give service with a smile and a cheerful word.*

D. Returning used dishes.

A system for dish return should be set up near the dishwashing unit, concealed as far as possible, from dining room view. Children can be taught to contribute to lunchroom efficiency by dismantling their own trays. A satisfactory procedure is to:

1. Put empty milk cartons in trash cans along with waste paper products.
2. Put flatware in container provided. Soapy water in container will eliminate the necessity of pre-washing flatware.
3. Handle scraping plates or trays by one of two methods:
    a. Scrape plate waste into container provided and stack trays.
    b. Pass unscraped plates through dish return window where they will be scraped immediately by designated people.

NOTE: See drawing of portable dish return in School Food Service Planning and Equipping Section IX in this handbook.

XVIII. NEW METHODS OF SERVICE

A. Scramble for school lunch.

1. Requires several serving stations dispensing entrees, salads, desserts, beverages, or breads.
2. Students "scramble" from station to station choosing their meal items. Students then exit through the cashier's stand.

B. School lunch goes buffet.

1. Self-serving buffets are attracting many customers.
2. Students are easily educated concerning meal requirements, sanitation, and serving techniques.
3. Advantages of buffets are less plate waste, more time to prepare food since food service employees are not serving, and satisfied students.

XIX. MERCHANDISING

Merchandising is any tool, activity, presentation of a product or atmosphere which helps create a greater demand for the product or service. Merchandising:

A. Helps sell more food to more satisfied customers.
   1. Eye appeal is stimulating.
   2. Appetite appeal is necessary.

B. Improves the image of the school food service program. (See Manager's Merchandising Checklist Sample No. 1) Examples of merchandising are:
   1. The menu.
   2. Uniforms or aprons of the personnel.
   3. Colors or decor of the dining room.
   4. Atmosphere created by the background music.
   5. Appealing smell of food.

C. The merchandising effort can be divided into three major headings:
   1. Facilities.
      a. Location.
         (1) Cafeterias located in elementary buildings do not appeal to secondary students.
         (2) In an ideal situtation, students should be able to go to the cafeteria without going outside the building.
      b. Design.
         (1) Lunch periods should be scheduled with consideration of the size of the cafeteria.
         (2) Dining area should be attractive and non-institutional.
   2. Operations.
      a. Serving.
         (1) Present food attractively.
         (2) Servers should have a pleasant attitude.
         (3) Use correct utensils.
         (4) Give uniform servings.

      b. Food preparation.
         (1) Adequate number of trained employees.
         (2) Work schedules.
         (3) Adequate equipment.
         (4) Standardized recipes.
      c. Student and parent involvement.
         (1) Committees.
         (2) Use suggestions whenever possible.
      d. Sanitation.
         (1) Clean and hygienic employees.
         (2) Clean and neat kitchen and dining areas.
   3. Food.
      a. Quality.
         (1) Purchased.
         (2) Prepared well and attractively.
      b. Quantity.
         (1) Planned in advance.
         (2) Portion sizes adjusted for the age and grade.

D. Merchandising food.

1. Ideas for attractive foods are everywhere. Magazines, food advertisements, menus, and recipes suggest ways to garnish foods and make them eye-appealing.
2. General rules for garnishing:
    a. Choose *colors* to brighten and contrast with the food.
    b. Pick *flavors* that round out and complement the food flavor; avoid extreme contrasts.
    c. Plan a crisp *textured* food with soft items.
    d. Cut garnishes in neat, evenly shaped pieces but avoid monotonous *shapes*.
    e. Keep the *size* in scale with the size of the dish to be garnished; garnishes should draw attention but not be the center of attention.
    f. Serve garnishes at the intended *temperature*.
    g. All garnishes should look *fresh*, natural, and simple.
    h. Arrangement should achieve the most *artistic* effect.
3. Garnish ideas:
    a. Plan the menus so there is a pleasing contrast of color, size, and shape of food in every meal.
    b. Colorful dishes or trays add interest to the meal.
    c. Cook vegetables so that they retain their fresh color and texture.
    d. Use the outside leaves of cabbage, cauliflower, or lettuce for deeper color and nutrients.
    e. Celery tops, paprika, dots of pimento, sliced olives, carrot curls, radish roses, scored cucumber slices, or green pepper rings provide interesting garnishes for meat and salads on the serving line.
    f. Use buttered bread crumbs on casserole dishes to give a beautiful golden brown.
    g. Concentrated frozen orange juice mixed with sugar and soft butter and spread on top of a hot layer cake makes an excellent topping. Punch holes in the cake to permit topping to seep in.
    h. Mix frozen orange juice concentrate with honey or brown sugar to make a glaze for ham.
    i. Drop a whole onion (or several) into the stock pot of black-eye peas, green beans or grean peas for much improved flavor.
    j. Make a conversation piece of the serving counter with an arrangement of fresh vegetables.

E. There are a number of things that can be done to delight students.

1. Use fresh vegetables to make a vitamin C brigade. Bits of pepper can be used effectively for cocked hats, monocles, eyes, mouth, etc. The stems of fresh onions can be braided for hair. Parsley is also effective for hair.
2. Paint faces on helium balloons and let float to the dining room ceiling for a special occasion.
3. Frost a sheet cake with white frosting. Cut into squares. Color coconut with green food coloring. Make a "nest" on each cake square. Put three jelly beans in each. This is very effective at Easter.
4. Make a sailboat by attaching a paper sail on a toothpick to a rectangle of cheese.
5. Make a boat from a half of a cucumber, sliced lengthwise. Fill with a vegetable salad.
6. Put red and yellow coloring into a cookie dough to make it orange. Decorate cookies with raisins to make Halloween cookies.
7. Cut flavored gelatin of different colors into one inch cubes and combine for a sparkling dessert.
8. Add hard boiled egg slices to vegetable salads for flavor, appearance, and nutritive value.
9. Fold applesauce and red cherries into lime flavored gelatin (substituting the applesauce for half of the water).
10. Add bits of pimento and chopped green pepper to whole kernel corn for "polkadot" corn.

11. Use lettuce, watercress, endive, romaine, or escarole under salads, especially meat salads.
12. Stuff prunes with cottage cheese to garnish a peach or apricot salad.
13. Pile mashed potatoes around the meat loaf in the serving pan to make an attractive border.
14. Use a decorative tip on the pastry bag when filling deviled eggs or stuffing celery. When stuffed, sprinkle with paprika.
15. Shake fresh grapes in a bag with colored gelatin dessert powder to give a frosted look. Use as a garnish on fruit salad or fruit compote.
16. Serve applesauce with an orange slice or a spiced apple slice.
17. Decorate puddings or other desserts with chopped peanuts or a maraschino cherry.
18. Serve gingerbread with whipped topping.
19. Sprinkle yams, fruit cups, cakes with crushed peanuts.
20. Roll bananas in crushed peanuts for salads.
21. Sprinkle nutmeg on custards.
22. Use colored icing on cookies such as orange on chocolate cookies for Halloween.
23 Sprinkle red or green gelatin on cookies before baking.
24. Sprinkle red or green gelatin over white cake icing or whipped topping.
25. Use toasted coconut on puddings or sprinkle over icing or toppings.
26. Sprinkle a few miniature marshmallows on top of chocolate or butterscotch pudding.
27. Make a "red, white, and blue" dessert. Use a red gelatin, white topping, and blue colored coconut.
28. Top pot pies with baked pastry stars or crescents.
29. Garnish salads or casseroles with red onion rings, green pepper rings, or both.
30. Roll small whole boiled potatoes in butter and chopped parsley.
31. Sprinkle vegetable salads with crumbled, hard-cooked egg yolk or croutons.
32. Decorate salads with paper thin carrot curls and cheese filled celery sticks.
33. Use hard-cooked egg slices, parsley, and pimento as a garnish.
34. Toasted, buttered croutons, sprinkled with parmesan cheese, go well with cream soups.
35. Hard-cooked eggs and cheese cut in slices or wedges are great for garnishing entrees.
36. Spiced apple rings or cubes of jellied cranberries contrast pleasantly with poultry or pork.
37. Use home-size packages of such items as radishes (for roses), potato chips, cheese curls, corn chips, cherry tomatoes, etc. to garnish steam table pans of menu items. A few on each pan is an inexpensive way to make ordinary foods look much more attractive.
38. Make colored eggs for Easter. Put food coloring and water in a jar or container and immerse peeled hard-cooked eggs.
39. Mix peanut butter with vanilla pudding for peanut butter pie.

MANAGERS MERCHANDISING CHECKLIST (Sample No. 1)

	YES	NO
1. Do you have a merchandising calendar including holidays, special day activities?		
2. Do you offer choice menus?		
3. Have you taken a survey of student likes and dislikes?		
4. Have you analyzed your customers to find out which students or groups are eating and why?		
5. Do you have a youth advisory council?		
6. Have you involved parents in your food service program?		
7. Have you implemented suggestions received from your customers when possible?		
8. Have you recently tried new items in your cycle menu?		
9. Have you held a tasting party for a representative group of students?		
10. Do you have an attractive, clean, neat, well-arranged, readily seen, up-to-date, and easy to read menu board.		
11. Are your written menus descriptive?		
12. Are your menus written with the right "personality" for the age group?		
13. Is the serving counter neat and attractive?		
14. Is the counter decorated for holidays?		
15. Is the food served attractively on the plate?		
16. Are the servers clean, appropriately dressed, and pleasant?		
17. Are the kitchen and cafeteria clean and sanitary?		
18. Do students stand in line less than 10 minutes?		
19. Is the dining room attractive?		
20. Have the school colors been used in decorating?		
21. Have you considered rearranging tables to allow small groups?		
22. Do secondary dining rooms have a name?		
23. Have you considered music for the secondary dining room?		

SECTION IV
(Part 1)
QUANTITY FOOD PURCHASING

Page

I. Sound Food Buying Practices 121
II. Cost of Food Is One of the Largest Expenditures in The School Food Service Program 121
III. Purchasing May be Defined as the Acquisition of Goods and Services and the Payment of Acceptable Prices for them. The "Rights" of Purchasing 121
IV. The Food Purchased Should Make the Maximum Contribution to the Nutritional Needs for Those to Whom It Is Served 121
V. Menus Affect Food Purchased 122
VI. A Systematic Plan for Controlled Purchasing Procedure Is Essential 122
VII. One Person Must Have the Authority Along with the Responsibility for Making Food Purchases 123
VIII. Three Basic Types of Purchasing Practices 123
IX. Procurement Standards 124
X. Procurement Standards Required for Bids Over $10,000 125
XI. Formal Bids (Sample) 126
XII. Specifications 127
    USDA Grade Marks 129
    Bid Specifications of Food Products Used by School Food Service Programs 130
    Shell Eggs 130
    Government Inspected Dried Eggs 131
    Milk Bid (Sample) 131
XIII. Compare Prices, Save Dollars 133
    Can Cutting Score Sheet 134
    Record of Informal Quotations 135
XIV. Ordering 136
    Market Order for Staple Groceries (Sample) 136
    Meat Order Form (Sample) 139
    Fresh and Frozen Fruits/Vegetables Order Form (Sample) 140
    General Market Order Form (Sample) 142
XV. Receiving and Inspecting 145
XVI. Vendor Responsibility 145
XVII. Food Standards: 145
    Standards for Meat and Poultry Products: A Consumer Reference List 147
    Reference List 147
    Calculations for Using the Consumer Reference List to Determine Product Meal Conribution 154
XVIII. Product Analysis 155
    Product Analysis Form 156
XIX. Labeling 157
XX. Convenience Foods 159
XXI. Purchasing Summary 160
XXII. Checklist for Buyers 162
    Glossary of Terms 163

QUANTITY FOOD PURCHASING

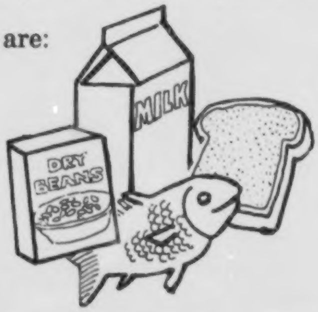
I. SOUND FOOD BUYING PRACTICES MAKE POSSIBLE

A. Nutritious, well planned meals for children in school food service programs.
B. Correct quantity and quality purchases at the best prices.
C. Conservation of materials and money.
D. Serving a school child a top quality meal at an affordable price.

II. COST OF FOOD IS ONE OF THE LARGEST EXPENDITURES IN THE SCHOOL FOOD SERVICE PROGRAM

A. In Oklahoma, school food expenditures are ranging from 40 to 50% of the total expense in some schools.
B. Factors involved in determining food purchases for the program are:

1. Budget.
2. Inventory.
3. Menu.
4. Meal requirements.
5. Nutritional needs of children.
6. Market.
7. Method of making purchases.
8. Storage facilities.



III. PURCHASING MAY BE DEFINED AS THE ACQUISITION OF GOODS AND SERVICES AND THE PAYMENT OF ACCEPTABLE PRICES FOR THEM. THE "RIGHTS" OF PURCHASING INCLUDE:

A. The right product.

B. The right quality.

C. The right quantity.

D. The right time.

E. The right price.

IV. THE FOOD PURCHASED SHOULD MAKE THE MAXIMUM CONTRIBUTION TO THE NUTRITIONAL NEEDS FOR THOSE TO WHOM IT IS SERVED. CONSIDER THE FOLLOWING:

A. *Inventory management.*

1. Quantities of food on hand influence the overall food service cost.
2. Money invested in inventory prevents use of the funds for other purposes.

B. *Budget.* Planned income should be balanced against carefully planned and controlled expenditures.
C. *Menu.* The menu and choices offered control the needed food.
D. *Labor cost and skill of personnel* have a bearing on purchase of pre-cooked and pre-portioned foods, mixes, and bakery products, fresh or frozen, etc.
E. *Equipment available.*

1. Oven space will determine amount of bakery products purchased.
2. Availability of a slicer will determine how cold meat or cheese will be purchased.

F. *Season, availability of food, current prices.* Use foods that are in season and those in plentiful supply.

G. *Storage facilities.* Kind and quantity of foods procured is affected by availability of:

1. Dry storage.
2. Refrigerated or frozen facilities.
3. Degree to which large volume purchases can be made.

H. *Frequency of delivery* may well affect price, quantities, and how often an item is purchased.

I. *USDA Donated Foods* most certainly will have an effect on what is purchased and in what quantities.

J. *Knowledge of the customer's acceptability* of the meal pattern requirements.

V. MENUS AFFECT FOOD PURCHASED

A. Advance menu planning allows time to:

1. Determine the quantities of food needed to meet requirements.
2. Explore the markets and to develop specifications for well thought out orders.

B. Menus should be planned at least two weeks in advance. Six-week cycle menus are preferable.

VI. A SYSTEMATIC PLAN FOR CONTROLLED PURCHASING PROCEDURE IS ESSENTIAL

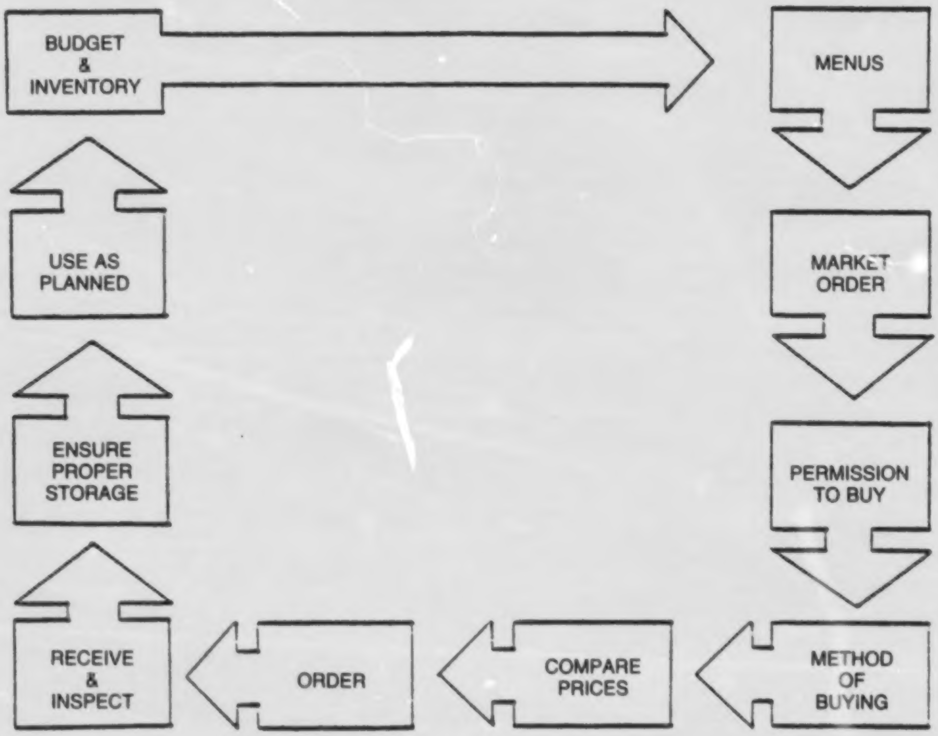
A. Federal regulations provide standards for use by state agencies and school food authorities in establishing procedures for the procurement of supplies including food, equipment, and other services with program funds.

1. Standards are furnished to ensure that materials and services are:
    a. Obtained in an effective manner.
    b. In compliance with provisions of applicable federal and state laws.
2. School food authorities may use their own procurement regulations, provided that procurements made with program funds adhere to the standards set forth in regulations.
3. For detailed information concerning these regulations, contact:
    a. The Oklahoma State Department of Education, School Lunch Section.
    b. A State Department School Lunch Program Consultant.

B. A systematic plan for procurement should be set up and carried out to meet specific needs and problems.

1. A knowledge of the purchasing process is necessary.
2. Properly organized purchasing procedures will save time, eliminate chance of errors, and ensure the delivery of supplies at the right place at the right time.

C. The following flow chart starts with the budget and inventory and continues through the use as planned.


BUDGET & INVENTORY
MENUS
MARKET ORDER
PERMISSION TO BUY
METHOD OF BUYING
COMPARE PRICES
ORDER
RECEIVE & INSPECT
ENSURE PROPER STORAGE
USE AS PLANNED

VII. ONE PERSON MUST HAVE THE AUTHORITY ALONG WITH THE RESPONSIBILITY FOR MAKING FOOD PURCHASES.

A. That person must have a thorough knowledge of budgeting, inventories, and marketing.

B. That person must become familiar with sources of supply.

C. The person must keep up-to-date with:

1. The products each vendor supplies.
2. Maximum and minimum size orders each vendor will accept for delivery.
3. Credit policies of each vendor.
4. Discounts offered, if any.
5. Delivery policies and schedules.
6. Seasonal availability.

D. The person will have a list of bidding records of responsible vendors. The information should include:

1. Name, address, and telephone number of the firm.
2. Items sold.
3. Discount terms.
4. Bid proposal, number, and date.
5. Response on bids.
6. Dependability in meeting deliveries.

E. Inform vendors what is expected and advise them of purchasing policies.

VIII. THREE BASIC TYPES OF PURCHASING PRACTICES

A. Open market.

1. In Oklahoma, some purchasing is done on an informal basis.
2. Purchasing varies with the size of school and the local market availability.

B. Negotiated buying.

1. An oral or written buying procedure is established by the purchasing policy of a system.
2. Records must be kept on all transactions.

C. Formal or competitive bidding.

1. The procedure involves submitting written specifications and quantity needs to vendors.
2. This is most effective in control of cost and quality.
3. A written notice of requirements is sent to a number of reputable vendors inviting them to submit bids (prices).
    a. The essentials of a contract are required.
    b. The contract must be legal and enforceable.
    c. An offer and acceptance consideration must be entered into by both parties.

"You should see the good price I got on black pepper!"

IX. PROCUREMENT STANDARDS

A. Requirements.

1. Effective with the 1979–1980 school year, all National School Lunch Program schools were required to follow the Federal Procurement Standards when obtaining food, equipment, and supplies for food service operations.
2. Schools may follow standards set up by states, school food authorities, or school boards, if such standards adhere to the following provisions. All schools (regardless of size of dollar amount of their purchases) must:
    a. Maintain a standard of conduct whereby their officers, agents or employees neither solicit nor accept gratuities, favors, or anything of monetary value from any vendor or potential vendor.
    b. Conduct all purchase transactions in a manner to provide maximum open and free competition (regardless of dollar value of purchase).
    c. Avoid purchasing unnecessary or duplicative items.
    d. Provide clear and accurate description of material, product, or services desired.
    e. Prepare description of items or services needed so as not to unduly restrict competition. "Brand name or equal" should only be used in descriptions to define specific features or performance requirements.
    f. Make positive efforts to allow small and minority owned businesses to compete for procurements.
    g. Avoid making "cost plus a percentage of cost" or "cost plus a percentage of income" arrangements to obtain goods or services.
    h. Agree to purchase or procure goods and services only from responsible contractors or vendors.
    i. Have a system for contract* administration to assure:
        (1) Contractor compliance with terms and specifications with adequate and timely follow up.
        (2) All contracts include a provision defining sound and complete agreement.

(3) Contract includes conditions for administrative or legal remedies or penalties, where contractors violate contract provisions.
(4) That any duly authorized representative of the Department or Comptroller General of the United States shall have access to all records for audit, etc.

B. Professional ethics. The integrity of the quantity food buyer is of the highest importance.

1. The purchaser must set high standards of professional ethics.
2. The school food service buyer handles the money of other people; buying for others with their money is a trust.
3. The purchaser cannot afford to compromise that position through purchasing practices that do not conform to accepted standards of ethics.

a. Compare price, quality and service; purchase on the basis of these factors. Obtain maximum value for each dollar spent.
b. Deal fairly with competitors. Do not play one person against another or disclose prices or other information that might favor one over another.
c. Use delegated responsibility and the school money to the best interest of the school system.
d. Avoid discussing business affairs outside of the office.
e. Never compromise personal freedom of action as a purchaser.
f. Set standards of high integrity.
g. Avoid all practices which would adversely affect the objectivity of decision and make no personal purchases from institutional vendors.

*NOTE: A contract is defined as a written, binding agreement between two parties.

X. PROCUREMENT STANDARDS REQUIRED FOR BIDS OVER $10,000.

A. Use formal advertising and/or formal bid procedures which generally include the following steps:

1. Generally state bid laws indicate three different newspapers in the area should carry the announcements.
2. Mail "Invitation to Bid" letters to all known area suppliers of goods or services desired. The yellow pages of a telephone book are one suggested reference.

B. Use adequate purchase description of goods or services requested. The descriptions or specifications are a part of the Invitation to Bid and must contain all requirements which must be met by bidders.
C. Sealed Bids. Potential contractors or vendors should be informed that bids are to be submitted sealed and the school must ensure that bids remain unopened until the public opening.
D. Public opening of bids. Time and place are to be mentioned in the newspaper advertisement and the Invitation to Bid letter with notice that the "public is invited." Usually two or more representatives of the school are present at public openings so that one can read the bids aloud and the other representative can record them on a bid comparison or evaluation sheet.
E. Awarding of bids.

1. Award shall be made to the responsible bidder whose:

a. Bid is responsive (i.e., to specifications, as well as terms and conditions of bid contained in Invitation to Bid).
b. Bid is most advantageous to the school, price and other factors considered.

2. Awards need not actually be made at public openings since further evaluation or review of bid information is usually needed to determine the "most responsive" bid. However, bids should be awarded within five to seven days according to most state bidding procedures.
3. Bid award and/or rejection letters may not be clearly required, but are the suggested professional way of confirming the action taken by the school.

4. A bid award letter sent to a vendor usually includes a copy of the original bid with a paragraph or sentence indicating the school's return of the bid which has been signed by the bidder and is now signed by the school, thus signifying that this document is a valid contract.

XI. FORMAL BIDS (Sample)

A. Invitation to bid.

1. Bids will be accepted by mail in The Office of the Food Service Director, Board of Education Building, at the above address until 9:00 a.m. on ______________.
2. All bids submitted shall be in strict conformity with specifications for each item and shall be submitted only on the attached forms.
3. A change of a bid submitted, if received after time and date of bid opening, will not be accepted.
4. Two copies of bid are to be returned and one maintained for purveyor's file.

B. Requirements.

1. Products are to be graded according to the United States Department of Agriculture standards.
2. Products shall conform in every respect to the provisions, standards, and regulations established by the Pure Food, Drug, and Cosmetic Act and other Federal and/or Oklahoma laws.

C. Quantities.

1. The quantities specified for each item are for the period from ______________ to ______________.
2. The buyer reserves the right to increase or decrease individual quantities by 10%.

D. Prices.

1. The length of time prices quoted remain in effect varies with different products. The period of time is shown on each bid sheet.
2. All prices quoted are to include the cost of transportation and delivery to each school. On some items a request has been made for price quotations twice a year, if delivery is to be made at a central location.

E. Samples.

1. Samples, when required for testing purposes, are to be identical to what the bidder proposes to furnish. Processed and frozen foods are to be of the latest pack.
2. Samples are not to be delivered unless requested. Upon request, they are to be delivered to The Office of the Food Service Director at the time specified.
3. Each individual sample must be properly marked with vendor's name.

F. Awarding of bids.

1. The Food Service Department reserves the right to accept or reject any or all bids or to terminate the contract at any time if the bidder fails, neglects, or refuses to comply with the terms of the bid.
2. Awards will be determined on the basis of quality, price, and service.
3. One copy of the bid will be signed by the Food Service Director and returned marked with the items awarded. This will be official authorization of bids awarded.
4. Awards are effective from one to nine months, depending upon the item.

G. Orders.

1. All merchandise will be ordered from the office of the Food Service Director. Purveyors are to accept no orders from individual schools. Salesmen are not to call on individual schools unless it is for the purpose of service on equipment.
2. A time schedule for purveyors to receive orders at the central office will be furnished at the time bids are awarded.

a. Canned foods, staples, miscellaneous, and cleaning supplies will be ordered once each month.
b. Frozen foods and eggs will be ordered weekly.
c. Fresh produce and meats will be ordered weekly or twice weekly.
d. Paper goods, dishwashing agents, and dishmachine supplies will be ordered annually.

H. Substitutions: No substitution of brand, grade, or price will be accepted unless previously cleared through the food service office.

I. Deliveries.

1. Deliveries are to be made to each individual school and are to be made on the date or dates so specified when orders are placed.
2. Deliveries are to be made between the hours of 7:00 a.m. and 2:30 p.m. Deliveries not made within this schedule shall be a cause for cancellation of a contract.
3. Canned foods, staples, and miscellaneous items will be delivered on a monthly basis; frozen foods and eggs on a weekly basis; meats not more than twice weekly; straws, napkins, and other paper goods will be delivered to one central point once each semester; dishmachine detergents and liquid pot and pan cleaner will be delivered once or twice annually.
4. Merchandise delivered in unsanitary containers, in an unsanitary manner, found to be unfit for use or failing in any way to comply with specifications of this proposal will be rejected and shall be removed at the expense of the bidder. More than two failures to comply in full with the terms of this proposal will be considered just cause for cancellation of this agreement.

J. Invoices.

1. Invoices for items delivered and accepted shall be submitted by the vendor and signed by the person receiving the merchandise. All invoices must be priced and extended.
2. One copy of the invoice shall be left in the school.
3. Billing sheets supplied by the buyer are to be completed and mailed with one copy of the signed invoice at the end of each calendar month to the food service office at the above address.
4. Billing sheets and invoices must be received by the fourth working day of the month for the previous month's deliveries.

K. Payments

1. Payment will be made in one check for all schools.
2. Payment will be made on the tenth of the month for merchandise received during the preceding month.

XII. SPECIFICATIONS

A. Written specifications can be defined as telling someone else what is needed in a specific, clear, and simple manner. Good specifications may be a simple description of the product wanted. All specifications should include the following:

1. Name of product (trade or brand) or standard.
2. Federal grade, brand, or other quality designation.
3. Size of container (weight, can size, etc.).
4. Count per container or approximate number per pound (number of pieces in container, where applicable).
5. Unit on which price will be based, such as cases of 6/10 cans; 4/1 gallon jars.
6. Description of the product.

B. Include descriptive information as appropriate.

1. Canned goods—Type or style, pack, syrup density, size, specific gravity, count, geographical origin and US Grade.

2. Meats and meat products—Age, exact cutting instructions, weight and range, composition, condition upon receipt of product, fat content, cut of meat to be used, market class and US Grade, or TVP content.
3. Fresh fruits and vegetables—Variety, weight, degree of ripeness or maturity, geographical origin.
4. Frozen foods—Temperature during delivery and upon receipt, variety, sugar ratio, and geographical origin.
5. Dairy products—Temperature during delivery and upon receipt, milk fat content, milk solids, and bacterial content.

C. Good specifications will be:

1. Clear and simple, but specific enough so that there are no "loopholes" which might allow a bidder to evade any provisions.
2. Identifiable with available products or grades.
3. Capable of being checked by label statements, US Grade, weight determination, etc.
4. Reasonable in terms of tolerance in order to be fair to the seller and protective to the buyer.
5. Capable of being met by several bidders to allow for competition.

D. US Grades simplify the specification writing procedure.

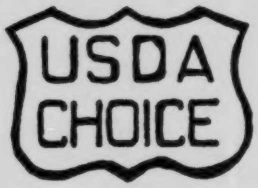
1. Specifications are given in all types of purchasing, whether by personal interview, telephone, or submitting of bids.
2. Written specifications are necessary for purchases made on invitation bids.
3. Two types of specifications commonly used by trade are brand names and US Grades.
4. There are, in addition, different grade names which describe varying qualities of each product. For example in describing eggs, the three consumer grades would be:
    a. US Grade AA (or Fresh Fancy): Rounded firm yolk and high thick white when broken out. Ideal for all purposes.
    b. US Grade A: Almost as high in quality as US Grade AA; good for same purposes.
    c. US Grade B: Less thick white; yolk may be somewhat flattened. Good for general cooking and baking.
5. Size and quality are not related! The six US size or weight classes are based on the minimum weight of eggs per dozen.

US Weight Class or Size	Minimum Weight in ounces Per Dozen
a. Jumbo	30 ounces
b. Extra Large	27 ounces
c. Large	24 ounces
d. Medium	21 ounces
e. Small	18 ounces
f. Peewee	15 ounces

6. Canned fruits are graded according to color, uniformity of pieces, and size.
    a. Canned vegetables are graded according to color, uniformity of size and shape, maturity, or tenderness and texture.
    b. Grades for canned fruits and vegetables are:
        (1) US Grade A (Fancy) —The highest quality and are almost perfect in uniform size, color. tenderness and maturity,
        (2) US Grade B (Extra-Standard for vegetables and Choice for fruits).—A high quality product but not as uniform in color, size, or tenderness.
        (3) US Grade C (Standard)—Good quality but less uniform in size, slightly less tender, color not as good. Good for cobblers, pies, soups, and stews.

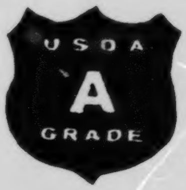
USDA GRADE MARKS

The grade names on the following grade marks are merely illustrative. The USDA has developed grade standards for processed foods. These serve as a yardstick for measuring the different quality of a product.


USDA
CHOICE

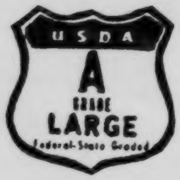
Meat

beef calf
lamb veal
mutton

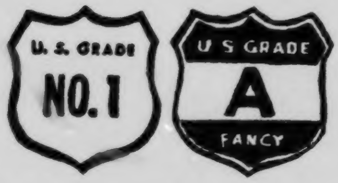

USDA
A
GRADE

Poultry

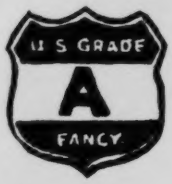
fryers, broilers ducks
stewing chickens geese
turkeys guineas


USDA
A
GRADE
LARGE
Federal-State Graded

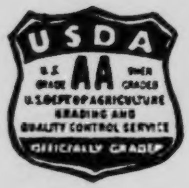
Eggs


U. S. GRADE
NO. 1
U S GRADE
A
FANCY

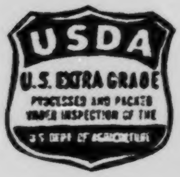
Fresh Fruit and Vegetables


U S GRADE
A
FANCY

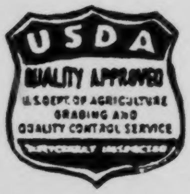
Processed (frozen, canned, dried) Fruits and Vegetables and Related Products


USDA
U.S. GRADE
AA
WHEN GRADED
U.S. DEPT OF AGRICULTURE
GRADING AND
QUALITY CONTROL SERVICE
OFFICIALLY GRADED

Butter
Cheddar Cheese


USDA
U.S. EXTRA GRADE
PROCESSED AND PACKED
UNDER INSPECTION OF THE
U.S. DEPT OF AGRICULTURE

Non-fat Dry Milk


USDA
QUALITY APPROVED
U.S. DEPT. OF AGRICULTURE
GRADING AND
QUALITY CONTROL SERVICE

Cottage Cheese
Process Cheese

E. The following bid specification examples used by some school food service programs are based on nationally accepted grades.

1. A wide variety of grades and standards are available.
2. Bid requests and purchase orders should indicate exactly the items desired. These items may vary according to local availability and preference.

F. Bid specifications of food products used by school food service programs.

1. Canned fruits and vegetables (Sample).

QUANTITY		GRADE	BRAND	CASE PRICE	UNIT PRICE
	Apples, sliced, **(Solid Pack 6/10) net wt. 100 oz.**	**C Stand.**			
	Apricots, halves, pitted, unpeeled, **(83–108 count, heavy syrup 6/10) net wt. 108 oz.**	**B Choice**			
	Grapefruit Sections (light syrup 6/10)	**B Choice**			
	Mixed Salad Fruit, chopped, (light syrup 6/10) net wt. 70 oz.	**B Choice**			
	Peaches, yellow cling, halves **(40–50 count, heavy syrup 6/10) net wt. 69 oz.**	**B Choice**			
	Pears, Bartlett, diced (light syrup 6/10) net wt. 65 oz.	**C Stand**			
	Pineapple, crushed, (juice pack 6/10) net wt. 98 oz.	**B Choice**			
	Beans, green, (not over 4 sieve, 6/10) net wt. 65 oz.	**A Fancy**			
	Beets, slices, small–medium slice (6/10) net wt. 70 oz.	**Grade C Stand.**			
	Corn, whole kernel, golden (6/10) net wt. 72 oz.	**A Fancy**			

2. Egg bid (Sample)

The attached general information for bid applies to this bid for eggs. Prices for eggs must remain firm for the period from ______________ to ______________.

SHELL EGGS

PRICE FOR CASE LOT (30 DOZEN)

ESTIMATED QUANTITIES		GRADE A FRESH	GRADE B FRESH
	Extra Large 27 oz. doz.		
	Large 24 oz. doz		
	Medium 21 oz. doz.		

a. Eggs must be graded and sized under the Federal or Federal-State Program. The Federal Shield showing grade and size or the Oklahoma State Stamp showing grade and size must be printed on each case.

b. The date of grading must also appear on each case. Eggs must be delivered within three days of grading and kept at 40°F.–50°F. until delivered.

c. Eggs will be ordered and delivered weekly.

GOVERNMENT INSPECTED DRIED EGGS

QUANTITY	ITEM	ESTIMATED QUANTITIES	SIZE PACK	PRICE PER PACK	PRICE PER POUND	PRICE PER DOZEN
	Whole					
	Yolks					
	Whites					

Bidder ______________________ Authorized Agent ______________________ Date____________

3. Milk bid (Sample).

   a. Sealed bids will be received by the Director of Food Service of the ____________ Independent School District #________ at the Administration Building or School Office until 9:00 a.m. on ______________.
   b. All bids shall be submitted on this prepared proposal blank. The bidder should retain a copy and return the original and one copy with the bid.
   c. The Board of Education reserves the right to reject any or all bids and to terminate the contract at any time if the bidder fails, neglects, or refuses to comply with the terms of the bid.
   d. Standards and specifications for milk to be delivered to the __________ School Cafeteria(s) in quantities "more or less" as set forth herein for the ______________ school year.
   e. All milk products must be produced, handled, and pasteurized in conformity and in accordance with the provisions of the Standard Milk Ordinance and Code, 1978 revision, recommended by the United States Public Health Service and in accordance with any future upward revisions of the above recommended ordinance and code. In addition to compliance with the Standard Milk Ordinance and Code, all milk must comply with the following specifications:

      (1) Milk-Grade A

         (a) To contain not less than three and twenty-five hundredths percent (3.25%) butterfat.
         (b) To contain not less than eight and twenty-five hundredths percent (8.25%) milk solids not fat.
         (c) Shall show a bacterial count of not more than 20,000 per cc at any time of delivery or coliform count exceeding 10 per milliliter in any of three or four samples examined.
         (d) Shall contain no added water, preservatives, oils, coloring matter, or any foreign matter.
         (e) Shall be pasteurized at not less than 143°F. for not less than 30 minutes or at not less than 161°F. for not less than 15 seconds.
         (f) Shall immediately after pasteurization be cooled to 45°F. or less and kept at such temperature until delivered.

      (2) Skim milk must contain less than 0.5 percent milkfat and at least eight percent non-fat milk solids.
      (3) Low fat milk may contain between 0.5 and two percent milkfat (specify percent).
      (4) Buttermilk made from skimmed milk must contain at least 8.25 percent milk solids.
      (5) Chocolate milk may be made of lowfat or whole fluid milk.*

*NOTE: (Lowfat chocolate milk does not fulfill the lowfat milk requirement for reimbursable meals.)

(6) Must come from dairies inspected and approved by the City, County, and State Health Departments and in addition, by an inspector selected by the buyer if such action is deemed necessary.
(7) All milk will be subjected to periodic tests for compliance with the above specifications by a private testing laboratory engaged by the purchaser and such products will be rejected if not in full compliance with these specifications.

f. Milk delivery.

(1) Deliveries are to be made daily, Monday through Friday, to the school sites listed below.
(2) Times of delivery are to be worked out with the successful bidder to the satisfaction of the purchaser and supplier.
(3) It is to be understood by each bidder that deliveries will be discontinued during regular school vacation periods as shown by a school calendar. Ample notice shall be given to the supplier.
(4) Milk is to be delivered in refrigerated trucks and placed in the refrigerated boxes provided by the school district. At the time of each delivery, all milk in the box is to be placed on top of the milk delivered that day.
(5) All unsold milk left in the boxes on Friday afternoon is to be replaced with fresh milk when the deliveries for Monday are made. All unsold milk will be picked up each afternoon preceding a vacation and credit given for same.
(6) The dairy agrees to be responsible for damage to the milk boxes that are a direct result of carelessness of the delivery man.
(7) School sites to which deliveries are to be made:

SCHOOLS	*ADDRESS*

(8) The aggregate amount of milk to be delivered each day will be approximately ________ half pints.
(9) The contractor will also deliver other commonly marketed dairy products not included under this contract at regular wholesale prices as needed by the individual schools.
(10) In the event of failure of the contractor to make deliveries of the milk products in such quantities as may be required and in accordance with the specifications herein set forth, the authorized agent of the Board of Education, ______________ School District, reserves the right to cancel this contract, to purchase milk on the open market or to make new contracts with other bidders.
(11) Any excessive costs resulting from purchases under this provision will be charged to the supplier under this contract.
(12) The successful bidder will be required to furnish a $5,000 performance bond.

g. Milk bid contract

The undersigned firm agrees to furnish dairy products according to the preceding specifications in approximate quantities as stated, at the price shown, and for the period as stated in this proposal. Bids may be made on the entire quantity of milk to be delivered to the schools listed. These schools are:

Price per ½ Pint Packaged.__________ Whole Milk
__________ Lowfat Unflavored Milk
__________ Chocolate Milk
__________ Lowfat Chocolate Milk
__________ Other.

Name of Firm ____

Signed By ______________________________ Title ______________

Date ______________________

The above bid proposal is hereby accepted and becomes a contract according to specifications and conditions stated herein.

School Authority ______________ Title ______________ Date ________

XIII. COMPARE PRICES, SAVE DOLLARS

A. Consider all variables.
   1. After bids are obtained from reputable vendors, the purchaser must study prices and determine which product is offered at the most reasonable cost with an acceptable quality.
   2. The cheapest product is not always the best bargain.
      a. The highest quality is not always right for the planned use.
      b. Do not buy merely because the price is low.
   3. "Bargains" are sometimes offered, but it is wise to find out why they are called bargains.

B. New products.
   1. An organized and efficient purchasing procedure is an important aspect of food service and is essential for good management.
   2. If purchasing wisely, the food service manager inspects and approves samples and examines new products that become available on the market in relation to:
      a. Nutritional considerations.
      b. Acceptability.
      c. Cost (refer to the index for information on menu-costing and budgets).

C. Utilize USDA Donated Foods when available. Refer to Quantity Food Purchasing (USDA Donated Foods) Section IV, Part 2 in this handbook for forms related to these items.

D. Can cutting.
   1. Schools find it profitable to have can cutting demonstrations on various brands and grades of fruits, vegetables, and particularly on new food items before bids are awarded for school food service purchases.
   2. Using the "can cutting" method, it is possible to find out:
      a. The cost per serving.
      b. The acceptability of the particular product to be purchased.

3. The "Can Cutting Score Sheet" (see sample), when completed, will show acceptability of a particular product. It also shows the kind of informative comparisons to be used in determining which is the best buy of four brands.

CAN CUTTING SCORE SHEET (SAMPLE)

Date ____________________

	Sample 1	Sample 2	Sample 3	Sample 4
Name of Product*				
No. of Cans Per Case				
Size of Can				
Cost Per Case				
Cost Per Can				
Servings Per Can				
Cost Per Serving				
Weights: Net Drained				
Measure: Liquid Solids				
Style				
Type				
Count				
Packing Medium				
Size and/or Form**				
Texture				
Color				
Flavor				
Absence of Defects				
General Appearance				

Signature ____________________

* Product brand is added after taste evaluation.
** Identify: large, medium, small, bits and pieces, halves or whole etc.

E. Using informal quotations

1. In purchasing fresh produce, prices, which have been quoted by various vendors, should be frequently checked. The form on this page is used in some schools to record this information.
2. Record of Informal Quotations (Example)

		VENDORS				
		Bill's Fresh Produce	Mary Ann's Market	Joe Doe	Jim Sales	Tom & Dick
ARTICLE	QUANTITY	PRICES				
Fresh Produce						
Lettuce	1 lb.	$ 0.156		$ 0.138		$ 0.146
Celery	1 doz.	$ 4.00	$4.80			
Onions	50 lb.	$11.00		$17.72	$22.19	
Frozen Items						
Strawberries	30 lb.	$19.95				$15.39
Broccoli	12, 2½ lb.	$16.95	$24.04		$23.03	
Spinach	12, 3 lb.		$14.50		$20.21	
Green Peas	20 lb.	$ 9.95		$ 9.82	$ 9.85	

NOTE: It would be to a school's advantage to purchase lettuce from Joe Doe, frozen strawberries from Tom & Dick, and the spinach from Mary Ann's Market, etc.

XIV. ORDERING

A. Preplanning conserves time, energy and promotes organization.

B. Schedules for receiving orders.

1. Set up a definite time for purveyors to receive orders.
2. Identify the person to receive orders.
3. Determine when orders shall be delivered.

C. An order form saves time; the time of the person placing the order and the one receiving it.

1. The order form can be a simple typed list of all items, both food and supplies.
   a. During the week or month, as it becomes apparent that an item will need to be ordered, it is checked on the order form.
   b. Meat, produce, staples, etc. may each be on different color paper.
2. Another method is to consolidate all of the items to be purchased from one company on one order form.

D. The following are sample market order forms which have been used by some schools.

MARKET ORDER FOR STAPLE GROCERIES (SAMPLE)

School ______________________ Date ______________________

ITEM	QUANTITY	ITEM	QUANTITY
FRUIT Apples, solid pack		Pineapple, chunks	
Applesauce		Plums, heavy syrup	
Apricot, halves		Rhubarb	
Apricot, solid pack		DRIED FRUIT Prunes	
Blackberries		Raisins	
Cherries, water pack		VEGETABLES Beans, green	
Cherries, Maraschino		Beets, diced	
Cranberry Sauce		Carrots, diced	
Grapefruit Sections		Carrots, sliced	
Peaches, pie pack		Corn, cream style	
Peach, halves		Corn, whole kernel	
Peaches, sliced		Mixed Greens	
Pears		Mixed Vegetables	
Pineapple, crushed		Onions, chopped	
Pineapple, broken slices		Onions, flakes	

MARKET ORDER FOR STAPLE GROCERIES (SAMPLE) CONTINUED

	QUANTITY		QUANTITY
Peas, blackeyed		Coconut	
Peas, green		Cornstarch	
Pepper, red		Cream of Tarter	
Potato Flakes		Food Coloring	
Potatoes, instant		French Dressing	
Potatoes, sweet		Garlic Salt	
Pumpkin		Garlic Seasoning	
Sauerkraut		Gelatin, flavored	
Spinach		Gelatin, plain	
Tomatoes		Ginger	
Tomato Puree		Honey	
Tomatoe Paste		Lemon Powder, granules	
CANNED MEAT Beef		Lemon Extract	
Pork		Liquid Smoke	
Tuna		Marshmallow	
MISCELLANEOUS Almond Extract		Macaroni	
Allspice		Margarine	
Baking Powder		Mustard, prepared	
Beans, Navy		Molasses	
Beans, Pinto		Mustard, dry	
Celery Salt		Nutmeg	
Celery Seed		Noodles	
Chili Powder		Onion Salt	
Chocolate chips		Paprika	
Cinnamon		Pecans	
Cloves, ground		Pepper, black	
Cocoa		Poultry Seasoning	

MARKET ORDER FOR STAPLE GROCERIES (SAMPLE) CONTINUED

ITEM	QUANTITY		QUANTITY
Poppy Seed		Yeast	
Salad Dressing		CLEANING SUPPLIES Ammonia	
Salt		Bleach	
Oregano		Dishmachine Detergent	
Salad Oil		Lime De-scaler	
Sesame Seed		Liquid Detergent	
Shortening		Pot and Pan Compound	
Soup Base Beef		Rinse Injector Materials	
Soup Base Chicken		Scouring Pads	
Soda		Scouring Powder	
Spaghetti		Sponge, cellulose	
MISCELLANEOUS Sugar, granulated		Sponge, stainless steel	
Sugar, powdered		PAPER GOODS Aluminum Foil	
Sugar, brown		Napkins	
Sweet Relish		Straws	
Tomato Catsup		Wax Paper	
Vanilla, concentrated		Vinyl Film	
Vinegar			
Worcestershire sauce			

MEAT ORDER FORM (SAMPLE)

School! ______________________ For Month of ______________________

	Week 1 Date:	Week 2 Date:	Week 3 Date:	Week 4 Date:	Week 5 Date:
BEEF Beef, ground					
Beef Tips					
Hamburger Patties					
Roast					
Steaks					
Stew, boneless chuck					
Veal Cutlets					
PORK Ham, boneless					
Ham, cured					
Ham, picnic					
Liver					
Pork Chops					
Pork Cutlets					
COOKED MEATS Bologna, sliced					
Pressed Ham, sliced					
Weiners, 10 per lb.					
Wieners, 16 per lb.					
POULTRY Frying Chickens					
Turkeys					
FISH Cod Fillets					
Fish Steaks, cooked					
Fish Sticks, raw					
EGGS Fresh					

Note: Some schools may find it helpful to title the column with days instead of weeks when determining quantity of food required.

FRESH AND FROZEN FRUIT/VEGETABLE ORDER FORM (SAMPLE)

School ______________________ For Month of ______________________

	Week 1 Date:	Week 2 Date:	Week 3 Date:	Week 4 Date:	Week 5 Date:
FRESH FRUITS/VEGETABLES Apples					
Bananas					
Cabbage					
Cabbage, red					
Carrots					
Cantalope					
Celery					
Cucumbers					
Grapes					
Lemons					
Lettuce					
Onions					
Oranges					
Parsley, bunch					
Peppers, green					
Radishes, bunch					
Spinach					
Tomatoes					
Potatoes					
Watermelon					
FROZEN FRUIT/VEGETABLES Apples					
Apricots					
Boysenberries					
Cherries					
Peaches					

FRESH AND FROZEN FRUIT/VEGETABLE ORDER FORM (SAMPLE) CONTINUED

	Week 1 Date:	Week 2 Date:	Week 3 Date:	Week 4 Date:	Week 5 Date:
FROZEN FRUIT/VEGETABLE Strawberries					
Broccoli, chopped					
Corn					
Peas, green					
Spinach					
Vegetables, mixed					

ALWAYS INVESTIGATE
THE MARKET
BEFORE PURCHASING!

GENERAL MARKET ORDER FORM (SAMPLE)

School ________________________ Date ________________________

FRESH PRODUCE

Fruits

________ Apples
________ Bananas
________ Cantaloupe
________ Italian Prunes
________ Lemons
________ Orange
________ Peaches
________ Watermelon
____
____

Vegetables

________ Cabbage
________ Cauliflower
________ Carrots
________ Celery
________ Cucumbers
________ Lettuce
________ Onions, dry
________ Onions, green
________ Parsley
________ Peppers, green
________ Potatoes
________ Radishes
________ Spinach
________ Squash
________ Tomatoes
________ Turnips
____
____

Canned Meats

________ Chicken
________ Corned Beef
________ Ham
________ Ham Shanks
________ Luncheon Meat
________ Salmon
________ Tuna
________ Turkey

FRESH MEATS AND EGGS

Beef

________ Beef, bologna
________ Beef, chipped
________ Beef, chuck roast
________ Beef, ground coarse
________ Beef, ground regular
________ Luncheon Meat
________ Stew Meat
________ Wieners
____
____

Pork

________ Bacon Squares
________ Ham, picnic
________ Ham, smoked, boned
________ Ham, smoked, with bone
________ Shoulder, boned
________ Sausage
____
____

Fish

________ Cod
________ Haddock
________ Perch
________ Sticks
____
____

Poultry

________ Chicken
________ Turkey
____
____

Eggs

________ Eggs
____

GENERAL MARKET ORDER FORM (SAMPLE) CONTINUED

FROZEN FOODS

Fruits

______ Cherries
______ Strawberries
______
______

Vegetables

______ Broccoli
______ Mixed Vegetables
______ Peas, green
______ Spinach, chopped
______ Spinach, leaf
______
______

MISCELLANEOUS

Miscellaneous Supplies

______ Aluminum Foil
______ Butter Chips
______ Cup Cake Cups
______ Dishmachine Soap
______ Dixie Cups (juice)
______ Matches
______ Napkins
______ Portion Cups
______ Sanitizing Agent
______ Scouring Pads
______ Scouring Powder
______ Soap Pads
______ Vat Soap
______ Waxed Paper
______
______

Miscellaneous Foods

______ Graham Crackers
______ Potato Chips
______ Salad Wafers
______
______

CANNED FOOD

Fruits

______ Applesauce
______ Apples, canned
______ Apples, dehydrated
______ Apricot Halves
______ Boysenberries
______ Blueberries
______ Cherries, pitted
______
______

CANNED GOODS

Fruits

______ Cranberries, strained
______ Cranberries, whole
______ Fruit Mix
______ Grapefruit Sections
______ Jam, assorted
______ Jelly, assorted
______ Oranges, mandarin
______ Peaches, halves
______ Peaches, pie pack
______ Peaches, sliced
______ Pears, halves
______ Pineapple, crushed
______ Plums, pitted
______ Prunes
______ Raisins
______ Rhubarb
______
______

Spices

______ Almond Extract
______ Allspice
______ Celery Salt
______ Celery Seed
______ Chili Powder
______ Cinnamon
______ Cloves
______ Cream of Tartar
______ Cumin
______ Garlic Salt
______ Ginger
______ Monosodium Glutamate
______ Mustard

GENERAL ORDER FORM (SAMPLE) CONTINUED

CANNED GOODS

Spices

______ Nutmeg
______ Onion Salt
______ Orange Crystals
______ Oregano
______ Paprika
______ Parsley Flakes
______ Pepper
______ Sage
______ Salt
______ Worcestershire Sauce
______ Vanilla Extract

Vegetables

______ Beans, dry kidney
______ Beans, dry lima
______ Beans, dry navy
______ Beans, dry pinto
______ Beans, green
______ Beans, wax
______ Beets, diced
______ Beets, sliced
______ Beets, pickled
______ Carrots, diced
______ Corn, whole kernel
______ Mixed Vegetables
______ Onions, dehydrated
______ Peas, green
______ Peas and Carrots
______ Peppers, red, diced
______ Peppers, green, diced
______ Pickles, dill, sliced
______ Pickles, sweet, sliced
______ Pickle Relish, sweet
______ Potatoes, dehydrated
______ Pumpkin
______ Sauerkraut
______ Spinach
______ Tomatoes
______ Tomato Paste
______ Tomato Puree
______ Tomato Sauce

Soups

______ Beef, base
______ Chicken, base
______ Chicken, cream of
______ Mushroom, cream of
______ Tomato

Staples

______ Baking Powder
______ Baking Soda
______ Chocolate Bits
______ Chocolate, unsweetened
______ Coconut
______ Cornstarch
______ Cornmeal
______ Flour
______ Gelatin, plain/assorted
______ Honey
______ Lard
______ Macaroni
______ Molasses
______ Mustard
______ Noodles
______ Nuts
______ Oil, salad
______ Oatmeal
______ Peanut Butter
______ Salad Dressing
______ Shortening
______ Spaghetti
______ Sugar, brown
______ Sugar, granulated
______ Sugar, powdered
______ Tapioca
______ Vinegar
______ Yeast

XV. RECEIVING AND INSPECTING

A. Inspecting all items received is an important part of the purchasing system.

   1. Inspection should be made of all foods when delivered to determine that all items are received.
   2 Paying for a small amount more than is received each day will soon increase the food cost a great deal. CHECK, WEIGH, COUNT, AND INSPECT UPON DELIVERY.

B. Delivery schedules should be set up at a convenient time so that management can check and verify deliveries.

   1. The weight, count, quality, quantity, grade, brand, container size, etc. must be verified against the invoice.
   2. Acceptance, rejections, or corrections must be made according to the terms of the contract.

XVI. VENDOR RESPONSIBILITY

Vendors should understand the needs of the school food service and be able to provide the service required. Vendors should:

A. Comply with contract terms.
B. Supply grade certificates or content information, if requested.
C. Deliver products which meet specifications outlined by the buyer.
D. Offer good delivery service.
E. Make deliveries when and where agreed.
F. Maintain sanitary facilities.
G. Be honest and dependable.

XVII. FOOD STANDARDS

Contents of certain food products should be defined.

A. Most food standards are regulated by the Food and Drug Administration of the Department of Health, Education and Welfare and the U.S. Department of Agriculture.
B. These standards are used as a guide by food manufacturers to ensure the quantity and quality of all food.
C. These standards include the following:

   1. Standards of identity.

      a. Describe the nature and character of a given item and specify the kinds and amount of ingredients that must go into a product.
      b. Identify what is in a food, how it is made, how the product looks, and set limits, such as fat and moisture content.

   2. Standards of fill:

      a. Regulate the quantity of the food in the container.
      b. Guide the packer as to how full the container must be to avoid deceiving the buyer.
      c. Require, in general, packages to contain the maximum quantity of food that can be sealed in the container and processed without damaging the food.
      d. Apply to products that may shake down or settle after filling, or those which are made up of a number of units or pieces packed in a liquid.
      e. Have been established for most canned fruits and vegetables, tomato products, and shellfish.

   3. Standards of quality:

      a. Apply chiefly to canned fruits and vegetables and describe the ingredients which go into the product.
      b. Limit and describe the number and kinds of defects permitted.

c. Establish minimum quality requirements but do not provide a basis for comparing foods as with grades.

D. Meat and poultry product standards are regulated by the Food Safety and Inspection Service, USDA, and are used as a guide by manufacturers of these foods to ensure the proper quality.

E. Standards of content pertain to meat products containing three percent or more of *raw* meat and to poultry products containing two percent or more *cooked* poultry.

F. Standardized products, such as "hamburger patties" or "ground beef patties," can be evaluated by the label.

1. Hamburger patties may not contain more than 30% fat, some of which may be added and can have no binders, extenders, or added water.
2. Ground beef patties may not contain more than 30% fat, without the addition of added fat and can have no binders, extenders, or added water.
3. A ground beef pattie may be of higher quality than a hamburger pattie because of the restriction of fat addition.

G. Standards for meat and poultry products: A consumer Reference list.

1. The reference list on the next page is for the identification of meat and poultry ingredient requirements in processed foods, such as beef with gravy or burritos.
2. If content of ingredients other than meat or meat alternate is desired, a product analysis would be necessary.
3. The expense of these processed food items is usually greater than school prepared items.
4. Refer to the example (Following the Reference List) of mathematical calculations for determining school lunch meat/meat alternate quantity requirements for processed foods. Processed meat and poultry items not appearing on this reference list require a product analysis or ingredient statement.

Standards For Meat and Poultry Products: A Consumer Reference List

BONED
POULTRY

Beef
With
Gravy

What's in a name? Plenty—when a meat or poultry product bears the mark of federal inspection by the U.S. Department of Agriculture. USDA standards for meat and poultry products set legal requirements for content, preparation and labeling before being manufactured and sold in commerce. Standards of identity set specific (and optional) ingredients a food must contain—such as the kind and amount of meat, percent of fat or moisture and additives, if any—when a product is to be labeled or identified by a common product name. Some standards set specific processing requirements, such as cooking and other procedures, to assure wholesomeness and safety of the finished product. Under USDA's inspection each product name is checked with the product's recipe—before the name goes on the label—to see that the name tells what's inside the package. For example, products labeled "beef with gravy," must contain at least 50% cooked beef; "gravy with beef," at least 35% cooked beef. Knowing USDA's standards for meat and poultry products can help in menu planning—not to mention comparisons between products. To get started, here's a list of some of the most popular products and the major USDA meat and poultry content requirement for them. For convenience, the list is divided into "Meat Products" and "Poultry Products."

MEAT PRODUCTS

All percentages of meat are on the basis of fresh uncooked weight unless otherwise indicated

Baby Food

High Meat Dinner—At least 26% meat.

Meat and Broth—At least 61% meat.

Vegetable and Meat-At least 8% meat

Bacon (cooked)—Weight of cooked bacon can't exceed 40% of cured, smoked bacon.

Bacon and Tomato Spread—At least 20% cooked bacon.

Bacon Dressing—At least 8% cured, smoked bacon.

Barbecued Meats—Weight of meat when barbecued can't exceed 70% of the fresh uncooked meat. Must have barbecued (crusted) appearance and be prepared over burning or smoldering hardwood or its sawdust. If cooked by other dry heat means, product name must mention the type of cookery.

Barbecue Sauce with Meat—At least 35% meat (cooked basis).

Beans and Meat in Sauce—At least 12% meat.

Beans with Bacon in Sauce—At least 12% bacon.

Beans with Frankfurters in Sauce - At least 20% franks.

Beans with Meatballs in Sauce - At least 20% meatballs.

Beef and Dumplings with Gravy or Beef and Gravy with Dumplings - At least 25% beef.

Beef a la King - At least 20% meat (cooked basis).

Beef a la Mode - At least 50% meat (cooked basis).

Beef Almondine with Vegetables - At least 18% meat (cooked basis).

Beef Burgundy - At least 50% beef; enough wine to characterize the sauce.

Beef Carbonade - At least 50% beef.

Beef Roulade - At least 50% meat (cooked basis).

Beef Sausage (raw) - No more than 30% fat. No byproducts, no extenders and no more than 3% water.

Beef Stroganoff - At least 45% fresh uncooked beef or 30% cooked beef, and at least 10% sour cream or a combination of at least 7½% sour cream and 5% wine.

Beef with Barbecue Sauce - At least 50% beef (cooked basis).

Beef with Gravy - At least 50% beef (cooked basis./**Gravy with Beef** - At least 35% beef (cooked basis).

Breaded Steaks, Chops, etc. - Breading can't exceed 30% of finished product weight.

Breakfast (frozen product containing meat) - At least 15% meat (cooked basis).

Breakfast Sausage - No more than 50% fat.

Brown and Serve Sausage - No more than 35% fat and no more than 10% added water.

Brunswick Stew - At least 25% of at least two kinds of meat and/or poultry. Must contain corn as one of the vegetables.

Burgundy Sauce with Beef and Noodles - At least 25% beef (cooked basis) and up to 20% cooked noodles; enough wine to characterize the sauce.

Burritos - At least 15% meat.

Cabbage Rolls with Meat - At least 12% meat.

Cannelloni with Meat and Sauce - At least 10% meat.

Cappelletti with Meat in Sauce - At least 12% meat.

Cheesefurter - Shall contain sufficient cheese to characterize the product.

Chili Con Carne - At least 40% meat.

Chili Con Carne with Beans - At least 25% meat.

Chili Hot Dog with Meat - At least 40% meat in chili.

Chili Mac - At least 16% meat. Must be qualified with true product name "Beans, Macaroni and Beef in Sauce."

Chili Pie - At least 20% meat; filling must be at least 50% of the product.

Chili Sauce with Meat or Chili Hot Sauce with Meat - At least 6% meat.

Chop Suey (American Style) with Macaroni and Meat - At least 25% meat.

Chop Suey Vegetables with Meat - At least 12% meat.

Chopped Ham - Must be prepared from fresh, cured, or smoked ham, plus certain kinds of curing agents and seasonings. May contain dehydrated onions, dehydrated garlic, corn syrup, and not more than 3% water to dissolve the curing agents.

Chorizos Empanadillos - At least 25% fresh chorizos or 17% dry chorizos.

Chow Mein Vegetables with Meat - At least 12% meat.

Chow Mein Vegetables with Meat and Noodles - At least 8% meat and the chow mein must equal ⅔ of the product.

Corned Beef and Cabbage - At least 25% corned beef (cooked basis).

Corned Beef Hash - At least 35% beef (cooked basis). Must contain potatoes, curing agents, and seasonings. May contain onions, garlic, beef broth, beef fat or others. No more than 15% fat; no more than 72% moisture.

Corn Dog - Must be accompanied by a true product name "Batter wrapped franks on a stick." Limited to 65% batter and a minimum of 35% frankfurter.

Country Ham - A dry-cured product frequently coated with spices.

Crackling Corn Bread - At least 10% cracklings (cooked basis).

Cream Cheese with Chipped Beef (Sandwich Spread) - At least 12% chipped beef.

Creamed Meat Products or Creamed Sauce with Meat Products (Chipped Beef, Cooked Beef, Cured Beef, Ham, Frank, Meatballs, etc.) - At least 18% meat product.

Crepes - At least 20% meat (cooked basis) if the filling has other major characterizing ingredient, such as cheese.

Croquettes - At least 35% meat (cooked basis).

Curried Sauce with Meat and Rice (Casserole) - At least 35% meat (cooked basis) in the sauce and meat part; no more than 50% cooked rice.

Deviled Ham - No more than 35% fat.

Dinners (Frozen Product Containing Meat) - At least 25% meat or meat food product (cooked basis) figured on total meal minus appetizer, bread and dessert. Minimum weight of a consumer package - 10 ozs.

Dumplings and Meat in Sauce - At least 18% meat.

Eggs Benedict - At least 18% cured smoked ham.

Egg Foo Yong with Meat - At least 12% meat.

Egg Rolls with Meat - At least 10% meat.

Enchilada with Meat - At least 15% meat.

Entrees: *Meat or Meat Food Product and One Vegetable* - At least 50% meat or meat food product (cooked basis).
Meat or Meat Food Product, Gravy or Sauce, and One Vegetable - At least 30% meat or meat food product (cooked basis).

Frankfurter, Bologna, and Similar Cooked Sausage - May contain only skeletal meat. No more than 30% fat, 10% added water and 2% corn syrup. No more than 15% poultry meat (exclusive of water in formula).

Frankfurter, Bologna and Similar Cooked Sausage with Byproducts or Variety Meats - Same limitations as above on fat, added water and corn syrup. Must contain at least 15% skeletal meat. Each byproduct or variety meat must be specifically named in the list of ingredients. These include hearts, tongue, spleen, tripe, stomachs, etc.

Frankfurter, Bologna and Similar Cooked Sausage with Byproducts or Variety Meats and Which Also Contain Nonmeat Binders - Product made with the above formulas and also containing up to 3½% nonmeat binders (or 2% isolated soy protein). These products must be distinctively labeled, such as "frankfurters with byproducts, nonfat dry milk added." The binders must be named in their proper order in the list of ingredients.

Fried Rice with Meat - At least 10% meat.

Fritters - At least 35% meat. A breaded product.

Gravy and Sauerbraten - 35% meat (cooked basis).

Gravy and Yankee Pot Roast - At least 35% meat (cooked basis). Meat is cooked by braising with or without vegetables.

German Style Potato Salad with Bacon - At least 14% bacon (cooked basis).

Goulash - At least 25% meat.

Gravies - At least 25% meat stock or broth, or at least 6% meat.

Ham - Canned - Limited to 8% total weight gain after processing.

Ham - Cooked or Cooked and Smoked (not canned) - Must not weigh more after processing than the fresh ham weighs before curing and smoking; if contains up to 10% added weight must be labeled "Ham, Water Added"; if more than 10% must be labeled "Imitation Ham."

Ham a la King - At least 20% ham (cooked basis).

Ham and Cheese Spread - At least 25% ham (cooked basis).

Hamburger, Hamburg, Burger, Ground Beef or Chopped Beef - No more than 30% fat: no extenders.

Ham Chowder - At least 10% ham (cooked basis).

Ham Salad - At least 35% ham (cooked basis).

Ham Spread - At least 50% ham.

Hash - At least 35% meat (cooked basis).

Hors d'Oeuvre - At least 15% meat (cooked basis) or 10% bacon (cooked basis).

Jambalaya with Meat - At least 25% meat (cooked basis).

Knishes - At least 15% meat (cooked basis) or 10% bacon (cooked basis).

Kreplach - At least 20% meat.

Lasagna with Meat and Sauce - At least 12% meat.

Lasagna with Sauce, Cheese and Dry Sausage - At least 8% dry sausage.

Lima Beans with Ham or Bacon in Sauce - At least 12% ham or bacon.

Liver Products Such as Liver Loaf, Liver Paste, Liver Paté, Liver Cheese, Liver Spread and Liver Sausage - At least 30% liver.

Macaroni and Beef in Sauce - At least 12% beef.

Macaroni and Cheese with Ham - At least 12% ham.

Macaroni and Meat - At least 25% meat.

Macaroni Salad with Ham or Beef - At least 12% meat (cooked basis).

Manicotti in Sauce (containing meat filling) - At least 10% meat.

Meat and Dumplings in Sauce - At least 25% meat.

Meat and Seafood Egg Roll - At least 5% meat.

Meat and Vegetables - At least 50% meat.

Meatballs - No more than 12% extenders (cereal, etc.—including textured vegetable protein). At least 65% meat.

Meatballs in Sauce - At least 50% meatballs (cooked basis).

Meat Ball Stroganoff - At least 45% meatballs (cooked basis).

Meat Casseroles - At least 25% fresh uncooked meat or 18% cooked meat.

Meat Curry - At least 50% meat.

Meat Loaf (Baked or Oven-Ready) - At least 65% meat and no more than 12% extenders including textured vegetable protein.

Meat Pasty - At least 25% meat.

Meat Pies - At least 25% meat.

Meat Ravioli - At least 10% meat in ravioli.

Meat Ravioli in Sauce - At least 10% meat in ravioli.

Meat Salads - At least 35% meat (cooked basis).

Meat Soups
Ready-to-Eat - At least 5% meat.
Condensed - At least 10% meat.

Meat Shortcake - At least 25% meat (cooked basis).

Meat Spreads - At least 50% meat.

Meat Taco Filling - At least 40% meat.

Meat Tacos - At least 15% meat.

Meat Turnovers - At least 25% meat.

Meat Wellington - At least 50% cooked tenderloin spread with a liver paté or similar coating and covered with not more than 30% pastry.

Mince Meat - At least 12% meat.

Mousaka - At least 25% meat. Must be qualified on label as "Eggplant and Meat Casserole."

New England Boiled Dinner - At least 25% cooked corned beef.

Oleomargarine or Margarine - If product is entirely of animal fat, or contains some animal fat, it is processed under federal inspection. Must contain—individually or in combination—pasteurized cream, cow's milk, skim milk, combination of nonfat dry milk and water or finely ground soybeans and water. May contain butter, salt, artificial coloring, vitamins A and D, and permitted functional substances. Finished product must contain at least 80% fat. Labels must clearly state which types of fat are used.

Omelet with Bacon - At least 9% bacon (cooked basis).

Omelet with Dry Sausage - At least 12% dry sausage.

Omelet with Ham - At least 18% ham (cooked basis).

Omelet with Standardized Meat Food Product (Creamed Chipped Beef or Corned Beef Hash) - At least 25% filling.

Pasties - At least 25% meat.

Pate De Foie - At least 30% liver.

Peppers and Italian Brand Sausage in Sauce - At least 20% sausage (cooked basis).

Pepper Steaks (Chinese) - At least 30% beef (cooked basis.)

Pizza Sauce with Sausage - At least 6% sausage.

Pizza with Meat - At least 15% meat.

Pizza with Sausage - At least 12% sausage (cooked basis) or 10% dry sausage, such as pepperoni.

Pork Sausage - Not more than 50% fat; may contain no byproducts or extenders.

Pork with Barbecue Sauce - At least 50% pork (cooked basis).

Pork and Dressing - At least 50% pork (cooked basis).

Pork with Dressing and Gravy - At least 30% pork (cooked basis).

Proscuitti - A flat, dry-cured ham coated with spices.

Quiche Lorraine - At least 8% bacon or ham (cooked basis) and 10% Swiss or Gruyere cheese.

Rice with Meat - At least 12% meat.

Salisbury Steak - At least 65% meat and no more than 12% extenders including textured vegetable protein.

Sandwiches (containing meat) - At least 35% meat in total sandwich; filling must be at least 50% of the sandwich.

Sauce with Meat, or Meat Sauce - At least 6% meat.

Sauerbraten - At least 50% meat (cooked basis).

Sauerkraut Balls with Meat - At least 30% meat.

Sauerkraut with Wieners and Juice - At least 20% wieners.

Sausage with Sauerkraut in Sauce - At least 40% sausage.

Scalloped Potatoes and Ham or Sausage - At least 20% ham or sausage (cooked basis).

Scallopine - At least 35% meat (cooked basis).

Scrambled Eggs with Ham in a Pancake - At least 9% cooked ham.

Scrapple - At least 40% meat and/or meat by products.

Shepherd's Pie - At least 25% meat; no more than 50% mashed potatoes.

Sloppy Joe - At least 35% meat (cooked basis). Must be qualified with true product name "Barbecue Sauce with Beef."

Snacks - At least 15% meat (cooked basis) or 10% bacon (cooked basis).

Spaghetti with Meat or Meatballs in Sauce - At least 12% meat.

Spaghetti with Sliced Franks and Sauce - At least 12% franks.

Spanish Rice with Beef or Ham - At least 20% beef or ham (cooked basis).

Stews (Beef, Lamb, and the like) - At least 25% meat.

Stuffed Cabbage with Meat in Sauce - At least 12% meat.

Stuffed Peppers with Meat in Sauce - At least 12% meat.

Sukiyaki - At least 30% meat.

Sweet and Sour Pork or Beef - At least 25% meat and at least 16% fruit.

Sweet and Sour Spareribs - At least 50% bone-in spareribs (cooked basis).

Swiss Steak with Gravy - At least 50% meat (cooked basis.)/**Gravy and Swiss Steak** - At least 35% meat (cooked basis).

Taco - At least 15% meat.

Tamale Pie - At least 20% meat; filling must be at least 40% of total product.

Tamales - At least 25% meat.

Tamales with Sauce (or with Gravy) - At least 20% meat.

Taquitos - At least 15% meat.

Tongue Spread - At least 50% tongue.

Tortellini with Meat - At least 10% meat.

Tortilla with Meat - At least 10% meat.

Veal and Peppers in Sauce - At least 30% meat (cooked basis).

Veal Birds - At least 60% meat and no more than 40% stuffing.

Veal Cordon Bleu - At least 60% veal, 5% ham, and containing Swiss, Gruyere or Mozzarella cheese.

Veal Fricassee - At least 40% meat.

Veal Parmigiana - At least 40% breaded meat product in sauce.

Veal Scallopini - At least 35% meat (cooked basis).

Veal Steaks - Can be chopped, shaped, cubed, frozen. Beef can be added with product name shown as "Veal Steaks, Beef Added, Chopped, Shaped and Cubed" if no more than 20% beef, or must be labeled "Veal and Beef Steak, Chopped, Shaped and Cubed." No more than 30% fat.

Vegetable and Meat Casserole - At least 25% meat.

Vegetable and Meat Pie - At least 25% meat.

Vegetable Stew and Meat or Meatballs - At least 12% meat in total product.

Won Ton Soup - At least 5% meat.

POULTRY PRODUCTS

All percentages of poultry—chicken, turkey, or other kinds of poultry—are on cooked deboned basis unless otherwise indicated. When standard indicates poultry meat, skin, and fat, the skin and fat are in proportions normal to poultry.

Baby Food

High Poultry Dinner - At least 18¾% poultry meat, skin, fat and giblets.

Poultry with Broth - At least 43% poultry meat, skin, fat, and giblets.

Beans and Rice with Poultry - At least 6% poultry meat.

Breaded Poultry - No more than 30% breading.

Canned Boned Poultry

Boned (kind), Solid Pack - At least 95% poultry meat, skin and fat.

Boned (kind) - At least 90% poultry meat, skin and fat.

Boned (kind), with Broth - At least 80% poultry meat, skin and fat.

Boned (kind), with Specified Percentage of Broth - At least 50% poultry meat, skin, and fat.

Cannelloni with Poultry - At least 7% poultry meat.

Chicken Cordon Bleu - At least 60% boneless chicken breast (raw basis), 5% ham and either Swiss, Gruyere or Mozzarella cheese. (If breaded, no more than 30% breading.)

Creamed Poultry - At least 20% poultry meat. Product must contain some cream.

Eggplant Parmigiana with Poultry - At least 8% poultry meat.

Egg Roll with Poultry - At least 2% poultry meat.

Entree:

Poultry or Poultry Food Products and One Vegetable - At least 37½% poultry meat or poultry food product.

Poultry or Poultry Food Product with Gravy or Sauce and One Vegetable - At least 22% poultry meat.

Poultry a la Kiev - Must be breast meat (may have attached skin) stuffed with butter and chives.

Poultry a la King - At least 20% poultry meat.

Poultry Almondine - At least 50% poultry meat.

Poultry Brunswick Stew - At least 12% poultry meat. Must contain corn.

Poultry Burgers - 100% poultry meat, with skin and fat.

Poultry Burgundy - At least 50% poultry; enough wine to characterize the product.

Poultry Burrito - At least 10% poultry meat.

Poultry Cacciatore - At least 20% poultry meat, or 40% with bone.

Poultry Casserole - At least 18% poultry meat.

Poultry Chili - At least 28% poultry meat.

Poultry Chili with Beans - At least 17% poultry meat.

Poultry Chop Suey - At least 4% poultry meat. **Chop Suey with Poultry** - At least 2% poultry meat.

Poultry Chow Mein, without Noodles - At least 4% poultry meat.

Poultry Creole with Rice - At least 35% cooked meat in poultry and sauce portion. Not more than 50% cooked rice in total product.

Poultry Croquettes - At least 25% poultry meat.

Poultry Croquettes with Macaroni and Cheese - At least 29% croquettes.

Poultry Dinners (a frozen product) - At least 18% poultry meat, figured on total meal minus appetizer, bread and dessert.

Poultry Empanadillo - At least 25% poultry meat including skin and fat (raw basis).

Poultry Fricassee - At least 20% poultry meat.

Poultry Fricassee of Wings - At least 40% poultry wings (cooked basis, with bone).

Poultry Hash - At least 30% poultry meat.

Poultry Lasagna - At least 8% poultry meat (raw basis).

Poultry Livers with Rice and Gravy - At least 30% livers in poultry and gravy portion or 17½% in total product.

Poultry Meat Loaf - A minimum of 65% raw turkey or 50% turkey meat and a maximum of 12% extenders.

Poultry Paella - At least 35% poultry meat or 35% poultry meat and other meat (cooked basis); no more than 35% cooked rice; must contain seafood.

Poultry Parmigiana - At least 40% breaded poultry.

Poultry Pies - At least 14% poultry meat.

Poultry Ravioli - At least 2% poultry meat.

Poultry Roll - No more than 3% binding agents, such as gelatin, in the cooked product; no more than 2% natural cooked-out juices./**Poultry Roll with Natural Juices** - Contains more than 2% natural cooked-out juices./**Poultry Roll with Broth** - Contains more than 2% poultry broth in addition to natural cooked-out juices./**Poultry Roll with Gelatin** - gelatin exceeds 3% of cooked product.

Poultry Salad - At least 25% poultry meat (with normal amounts of skin and fat).

Poultry Scallopini - At least 35% poultry meat.

Poultry Soup

Ready-to-Eat - At least 2% poultry meat.

Condensed - At least 4% poultry meat.

Poultry Stew - At least 12% poultry meat.

Poultry Stroganoff - At least 30% poultry meat and at least 10% sour cream or a "gourmet" combination of at least 7½% sour cream and 5% wine.

Poultry Tamales - At least 6% poultry meat.

Poultry Tetrazzini - At least 15% poultry meat.

Poultry Turnovers - At least 14% poultry meat.

Poultry Wellington - At least 50% boneless poultry breast, spread with a liver or similar pate coating and covered in not more than 30% pastry.

Poultry with Gravy - At least 35% poultry meat./**Gravy with Poultry** - At least 15% poultry meat.

Poultry with Gravy and Dressing - At least 25% poultry meat.

Poultry with Noodles or Dumplings - At least 15% poultry meat or 30% with bone./**Noodles or Dumplings with Poultry** - At least 6% poultry meat.

Poultry with Noodles Au Gratin - At least 18% poultry meat.

Poultry with Rice - At least 15% poultry meat.

Poultry with Vegetables - At least 15% poultry meat.

Sauce with Poultry or Poultry Sauce - At least 6% poultry meat.

Stuffed Cabbage with Poultry - At least 8% poultry meat.

Stuffed Peppers with Poultry - At least 8% poultry meat.

Turkey Ham - A product made with turkey thighs only and cured.

Effective May 8, 1977, the functions performed by the Meat and Poultry Inspection Program were transferred from the Animal and Plant Health Inspection Service to the Food Safety and Quality Service.

Meat and Poultry Inspection Program
Food Safety and Quality Service
UNITED STATES DEPARTMENT OF AGRICULTURE

Revised July 1977

CALCULATIONS FOR USING THE CONSUMER REFERENCE LIST TO DETERMINE PRODUCT MEAL CONTRIBUTION

EXAMPLE 1: BARBECUE SAUCE WITH MEAT—35% meat (*cooked basis*)

16 oz.
× .35
80
48
5.60 oz. (5.60 oz. meat in 16 oz. of Barbecue Sauce with Meat)

Therefore:

5.6 ÷ 2 (ounces) = 2.8 (servings of meat in 16 oz. of Barbecue Sauce with Meat)

OR:

5.6 ÷ 3 (ounces) = 1.87 (servings of meat in 16 oz. of Barbecue Sauce with Meat)

Percentages are based on fresh *uncooked* weight (unless *cooked basis* is stated) therefore, percentage of meat must be multiplied by 70% to arrive at amount of cooked meat.

EXAMPLE 2: Meat Ravioli - 10% meat (if not stated, indicates uncooked meat)

10% meat uncooked
× .70
7.00% (7% cooked meat in a No. 10 can of Meat Ravioli).

AND:

108 oz. = 1 No. 10 can
× .07
7.56 (ounces) = a rounded figure of *8 ounces* of cooked meat in a No. 10 can of Meat Ravioli

Therefore:

8 ÷ 2 (ounces) = 4 (servings of meat in a No. 10 can of Meat Ravioli).

AND:

A 3 cup serving = 2 ounces of meat.

OR:

It would take 25 No. 10 cans of Meat Ravioli to serve 100 two ounce servings.

EXAMPLE 3: Tamales - 25% meat (if not stated, indicates uncooked meat)

25% meat, uncooked
× .70
17.50% (18% cooked meat in a No. 10 can of Tamales)

AND:

108 oz. = 1 No. 10 can
× .18
864
108
19.44 (ounces) = a rounded figure of *19 ounces* of cooked meat in a No. 10 can of Tamales

Therefore:

19 ÷ 2 (ounces) = 9.5 (there are 10 [9.5 rounded] servings of meat in a No. 10 can of Tamales)

AND:

10 × 10 (cans) = 100 (it takes 10 No. 10 cans to make 100 two ounce servings)

XVIII. PRODUCT ANALYSIS

Products without a standard should have a product analysis.

- A. A lack of standard means:
  1. Content of the item cannot be interepreted by the purchaser unless:
     - a. The ingredient percentages are stated on the label.
     - b. An analysis is furnished by the company or food analysis laboratory.
  2. Some popular meat products have no standards such as "beef patties" and "meat patties."
     - a. The only criteria for these products is that they be pattie shaped.
     - b. They may have varied amounts of meat and fat.
     - c. Extenders such as cereal or soy derivatives may be added.
- B. Lack of established standards prevents evaluation by the name on the label.
  1. Ingredient statements given on the label only indicate percentages in the content.
  2. A product analysis would be necessary to determine what is contained in each item. (See Sample No. 1 on the following page.)
- C. When purchasing meats containing "textured vegetable protein" (FNS 219 Approved), the following information is necessary for an adequate analysis.
  1. Amount of lean meat, ounces or percentage, indicating whether the meat is raw or cooked.
  2. Amount of fat; the raw product may not contain more than 30% fat.
  3. Amount of hydrated textured vegetable protein (TVP).
     - a. The raw product may not contain more than 30% hydrated TVP.
     - b. TVP may be added only to meat, poultry, or fish.
  4. Amount of water; the product must contain a moisture content of 60% to 65%.
     - a. To achieve the moisture level of 60% to 65%, the ratio of dry TVP to water on weight basis should be 1 to 1.5 (1 part dry TVP to 1½ parts water).
     - b. Percentage would be 12% dry TVP to 18% water.
  5. Amount of breading; if the product is breaded, the amount needs to be stated in the analysis.
  6. For additional information on the use of TVP, refer to Section II "Standardized Quantity Recipes" in this handbook.
- D. Products without TVP also require information for an adequate analysis.
  1. Amount of lean meat; ounces or percentage, indicating whether the meat is raw or cooked.
  2. Amount of fat; the product may not contain more than 30% fat.
  3. Amount of breading; if the product is breaded, the amount needs to be stated in the analysis.

PRODUCT ANALYSIS FORM (Sample No. 1)

This product analysis form is an example of one that provides information to enable the purchaser to determine to what extent a meat product is purported to contribute to the meal pattern requirements. Minor changes in the form would be necessary if a product with a meat alternate, such as cheese or beans, were used.

Product Name: ________________

Product Code: ________________

List Variety (ies) of Meat Used in Product: ________________

Total Weight of Uncooked Product: ________________

Weight of Raw Meat: ________________

Percent Fat of Raw Meat: ________________

*Weight of Dry TVP: ________________

*Weight of Hydrated TVP: ________________

*Weight of Raw Meat and Hydrated TVP: ________________

Weight of Other Ingredients: ________________

Total Weight of Precooked Product: ________________

Weight of Breading, if Used: ________________

Weight of Precooked Meat *with TVP: ________________

I certify that the above information is true and correct, and that the above meat product (ready for serving) contains _____ ounces of cooked lean meat/meat alternate when prepared according to directions.

Signed	Title
Company	Date

* This information is needed if Textured Vegetable Protein, conforming to FNS-219, is used in the product and counted toward meeting the 2 ounce meat/meat alternate requirement. If FNS-219 is used, the following should be added to the above certified statement.

I further certify that the textured vegetable protein used in this product conforms to FNS Instruction 219, in the following manner.

1. The TVP used is on the FNS approved list.
2. The TVP is rehydrated 1 to 1.5 by weight (1 part dry TVP to 1.5 parts water).
3. The hydrated TVP is not more than 30% by weight of the meat and TVP.

XIX. LABELING

A. Labeling requirements made mandatory by the Pure Food, Drug and Cosmetic Act are:
   1. The common or usual names of all ingredients, listed in descending order of their predominance by weight.
   2. The name and address of manufacturer, packer, or distributor.
   3. The statement of the quantity of the contents in weight, measure, or numerical count.
   4. The name of artificial flavoring, coloring or chemical preservatives.

B. Descriptive labeling such as brand names, recipes or number of servings may be added voluntarily by processor.

I SOLEMNLY PROMISE TO TELL THE TRUTH, THE WHOLE TRUTH AND NOTHING BUT THE TRUTH!

C. Label requirements mandated by The Meat Inspection Act and Poultry Products Act are:
   1. The product's name (common, usual, or descriptive).
   2. The net weight.
   3. The name of packer or distributor.
   4. The ingredients listed in descending order.
   5. Official establishment number and legend. This will be Federal or State of Oklahoma Inspection mark.

D. Other label information such as recipes, number of servings, etc. may be added voluntarily.

E. Nutrition labeling is now required for any canned, frozen, processed, or packaged food if:
   1. There is any nutritional claim of the product.
   2. Nutrients have been added (fortification or enrichment).

F. While nutrient information is not usually included on labels of food packed in institutional size containers, this information can be requested and obtained by the buyer from the packer or processor.

G. Product claims must be supported by:
   1. Qualitative and quantitative formulas.
   2. Raw and cooked weights of ingredients.
   3. Processing procedures.
   4. Labels bearing information on portion size and count.

H. The child nutrition label:
   1. Is a statement on commercially prepared foods listing product contribution toward the Child Nutrition Program requirements.
      a. It may be used only after approval from Nutrition and Technical Services Division, Food and Nutrition Services USDA.
         (1) Based on a review of product formulation by Food Nutrition Services.
         (2) Procedure and formulation observed by USDA or US Department of Commerce inspectors.

   b. It is designed to assist school food service managers in determining how to credit commercially prepared combination products to meet child nutrition meal pattern requirements.

2. It provides information on products containing a combination of food items that cannot be easily separated or identified at the point of purchase.
3. It will contain the following:
   a. Weight or volume of a portion, if the food is preportioned.
   b. Contribution made by a given amount of food towards the meal requirements such as: "This cooked ______ ounce pattie provides ______ ounces equivalent of meat/meat alternate for the School Lunch Meal Pattern.
   c. Date that the label statement was approved.
4. It does not:
   a. Assure product quality.
   b. Indicate USDA product endorsement.
   c. Serve as a promotion of product nutritional values.
   d. Show that product fact sheets and letters of certification have also been approved by USDA.
5. Products are not eligible for a CN label:
   a. If meal pattern contribution of product can be determined from the "USDA Food Buying Guide for School Food Service," Program Aid No. 1257.
   b. If no standard of identity exists or if the existing standard is inadequate for crediting purposes.
   c. If current preparation and cooking yield information for a specific ingredient is not considered sufficiently reliable to predict product combination.
6. A sample CN label is shown below.

Brand 'X' 5.00 oz. Pizza with Ground Pork and Textured Vegetable Protein (containing 1.26 ozs. equivalent cooked meat, 0.75 ozs. cheese and 1.50 ozs. enriched pizza crust), provides 2.00 ozs. equivalents meat/meat alternate and a serving of bread for Type A Pattern Requirements. (January 1980)

BRAND 'X'

EST. 38

PIZZA with GROUND PORK and TEXTURED VEGETABLE PROTEIN

INGREDIENTS: *Crust:* enriched wheat flour, water, oil, yeast, dextrose, salt, leavening; *Pizza Topping:* Ground Pork (no more than 26% fat), water, textured vegetable protein (Soy flour, Caramel coloring, Dicalcium Phosphate, Ferrous Sulfate, Niacinamide, Calcium Pantothenate, Pyrodoxine Hydrochloride, Thiamin Mononitrate, Riboflavin, Cobalamin), Salt, sugar, dextrose, oregano, garlic powder; *Sauce:* Tomatoes, water, dextrose, food-starch modified, oil, salt, paprika, xanthan gum, spices, garlic powder, onion powder; *Cheese Topping:* Low-Moisture Part-skim Mozzarella cheese

Contains:
96 Pizzas
4" x 6" each
5.00 ozs. each

Mfd. by:
'X' COMPANY
General Office
Emerald City, Oz 12345

KEEP FROZEN

XX. CONVENIENCE FOODS

In school programs, convenience foods are not new. Breads, canned goods, dehydrated, and many frozen items are used daily in the programs. However, with the many new items appearing in the markets daily and with a complete menu available in the convenience line from the frozen entree to the dessert, each program must evaluate convenience foods in light of its own situation, its own set of goals, and its own budget.

A. Advocates in favor of convenience foods believe that convenience foods:

1. Save labor costs.
2. Allow better and more consistent quality control.
3. Reduce space needed for kitchens and storage.
4. Reduce chance of spoilage.
5. Allow more variety in the menu.

B. Arguments against convenience foods include:

1. The quality may not be as good as food prepared on the premises.
2. USDA Donated Foods may not be utilized to the fullest extent.
3. Convenience foods may be more expensive.
4. All foods may not be heated to the proper serving temperature in the same amount of time.
5. Additional freezer space and dry storage may be required.

C. When a convenience food or frozen entree-type item is used, the primary concern is to determine the actual nutritional contribution made to the meal.

1. The exact amount of meat/meat alternate and fruit and/or vegetable used in the product should be stated on the label or fact sheet.
2. Labels do not always reveal the contribution various meat products make toward the meat/meat alternate requirement of the Meal Pattern.
3. Combination foods containing more than one meat/meat alternate appear to be the most difficult to interpret.
4. Important questions which should be resolved regarding such meat products are:
    a. How much cooked lean meat is in the product?
    b. What is the fat content of the meat? (It should be no more than 30%).
    c. If cooked dry beans are used, what is the volume measure? (Note: The Meal Pattern requirements for beans are measured by volume, not ounces.)
    d. If TVP is used to contribute toward the meat/meat alternate requirement, is it used in compliance with FNS-219?
    e. Finally, what contribution does the product make toward meeting the Meal Pattern requirements?

D. Another class of products which sometimes provides difficulty in determining contribution to the Meal Pattern requirements is cheese alternates. It is necessary when using such products that:

1. The cheese alternate be combined in the cooking or heating process.
2. The quantity must be used in equal amounts with a natural or processed cheese.
3. When correctly combined and prepared, the resulting product does contribute on an equal basis to the Meal Pattern requirement as would a natural or processed cheese.
4. Questions regarding specific products and their approval by FNS should be directed to either the state agency or state program consultants.

E. There are new pre-washed, pre-peeled, pre-cooked, pre-packaged products appearing on the market daily.

1. By saving preparation time, "convenience" foods are supposedly saving time and labor.
2. It should be remembered that someone, somewhere, between the producer and consumer has done the peeling, washing, cooking, and packaging.
3. Any processor service adds to the cost of convenience foods as compared with their fresh counterparts.

4. Some convenience foods are cheaper than the fresh foods because they are more compact to ship and store and have a longer shelf life. For example, frozen or canned peas may be cheaper than fresh ones.

F. The decision that convenience foods are really economical must be based on:

1. Cost comparison of both food and labor with school prepared items.
2. Utilization of USDA Donated Foods.
3. Contribution per serving to the Meal Pattern requirements as related to the over-all cost.
4. Efficiency of personnel.

XXI. PURCHASING SUMMARY

A. Wise purchasing of food requires training, time, and experience.

1. The purchaser must know where, what, how, and when to buy.
2. Food purchased must:
    a. Suit the use for which it was intended.
    b. Be nutritionally sound and satisfying.
    c. Be within budget guidelines.

B. Plan menus before purchasing.

1. Foods must be purchased that fit the needs of the Meal Patterns and are acceptable to the customers.
2. A food inventory must be maintained and used when planning menus and purchases.
3. Planning prevents meals from being monotonous and lacking variety.

C. Cost menus regularly.

1. Compare the cost of food per serving.
2. Costing by the can may be misleading as the lower priced can may contain food with a lot of liquid.
3. Check the product quality on a continuous basis even when buying the same brand.
4. Quality is always considered when cost comparisons are made.
5. A product of poor quality is expensive whether it is canned, fresh, frozen, or dehydrated.

D. Keep purchases within the food budget.

1. When salesmen call or an order is placed, know what is needed and do not purchase foods unless there is a use for them.
2. Purchase from a reliable source; replacement or credit for foods that do not meet specifications as agreed upon may be necessary.
3. Be cautious of products "on sale" as these could be too old, too large a quantity for the storeroom, or too much to be used in a reasonable length of time.
4. Food losses add to the meal cost and can ruin a budget.
5. Distress merchandise is a bargain only if it is possible to see what is being purchased; if it fits the needs; and if the price is considerably lower than the regular market price.
6. Purchase according to use for which food was intended.
    a. Use whole fruits and/or vegetables when being served individually.
    b. Use bits and pieces when being used in soups, casseroles or stews.
7. Grades, such as fancy or choice, are for quality and not a mark of wholesomeness or nutritive value.

E. Purchase in quantities when profitable.

1. Purchasing in large quantities saves money and time. Many times quantity purchases enable buying at lower prices.
2. Buy in quantities as large as practical for use and storage.
3. Take advantage of discounts for "case lot" buying.

F. Check all deliveries when receiving food.

   1. Be certain the item ordered is the item received according to amount, price, brand, grade, etc.
   2. Financial loss and inconvenience is the result of not checking deliveries.

G. Ensure proper storage.

   1. After the delivery order is checked, each item must be properly stored.
   2. Proper storage ensures higher yields, acceptability, and nutritive content.
   3. Adequate freezer, refrigerator, and dry storage space must be available for the quantities of food ordered.
   4. Orderly arrangement and accessibility must be maintained.

H. Use as planned.

   1. Keep records.
      a. Some school systems find it to their advantage to keep a continuous record of products received.
      b. Record such information as acceptability, yield, cost per serving, quality, company service, etc.
   2. A review of food purchased and menus planned and served should be made frequently to assure the buyer that the food items purchased are being utilized in the most advantageous manner as planned.
   3. When purchases and use are coordinated in accordance with a plan, costs are controlled. It is then possible to operate within a budget and maintain an orderly withdrawal of foods from stock in the storeroom.

I. Evaluate.

   1. Purchasing is a continuing process.
   2. School food service personnel should always be alert for improvement.
   3. It will be necessary to use all information and knowledge acquired. Records and past performance should be used to check against standards to help purchase the very best within financial ability so that the school system can produce high quality meals that the children will enjoy eating.
   4. Set standards and establish procedures, then evaluate to be sure performance follows the overall plan.

J. A good purchasing structure is built upon a system. A system requires standardization. Standardization is based upon specifications.

   1. Control is the key to efficiency in all functions of the school food service program.
   2. Control the "loose ends" in purchasing so the system won't "lose" money.

XXII. CHECKLIST FOR BUYERS

A. Do you buy?
B. Are you sold?

Listed below are 15 questions that will help determine the answer.

	Yes	No
1. Are menus planned in advance? (at least one month)		
2. Are purchases made according to specific needs of menus?		
3. Are product needs identified before the salesman calls?		
4. Are specifications and market orders written describing the food quality and quantity best suited for menu needs?		
5. Is knowledge current and up-to-date on changes in food quality, packaging, and new products?		
6. Are new products obtained in small quantities and evaluated before including them on menus and purchasing in large quantity?		
7. Is good use made of seasonal foods and food in plentiful supply on local markets?		
8. Are products purchased because they meet menu needs or because of the brand name or vendor?		
9. Has a realistic bid schedule been established?		
10. Are all personal gifts, premiums, stamps, etc. returned or refused?		
11. Are foods inspected for quality and quantity when they are delivered?		
12. Are all foods stored promptly once they are delivered?		
13. Has an efficient method been established for accounting for purchases?		
14. Are inventory records kept up-to-date?		
15. Are perpetual inventories checked periodically with physical inventories?		

GLOSSARY OF TERMS

BID: An offer to perform in accordance with the specifications and conditions for a stipulated price.

BRIX: A Brix hydrometer tests the density of syrups. Standards of syrup density are set for specific fruits. The Brix reading represents percentages by weight of sugar in the solution.

BROKER: An individual hired to act as an agent or intermediary in making contracts of sales.

CODE MARKING: Numbers or letters stamped on one end of the can or printed under the label to identify size, date, plant, name, grade, or style of product.

CONTRACT: A bid which has been accepted and awarded to the lowest responsible bidder meeting specifications.

COUNT: The number of items per container.

DELIVERY ORDER: A purchase order placed against an awarded contract.

DRAINED WEIGHT: The weight of the product after the liquid packing medium has been allowed to drain two minutes on a screen.

ENRICHMENT: The addition to a food of one or more vitamins or minerals which are naturally present in a food, to increase the consumption of such nutrients.

FORTIFICATION: The addition to a food of one or more vitamins or minerals, which are not naturally present in a food, to increase the consumption of such nutrients. Examples are the addition of vitamin D to milk or iodine to salt.

HEAVY PACK: A style of pack which contains more fruit and less liquid than the average.

INVENTORY: The value of goods on hand at the end of the accounting period.

INVITATION TO BID: An announcement to the commercial community that an opportunity exists for the submission of bids on specific items advertised.

INVOICE: A formal statement from the suppliers to the purchaser listing the amount due and terms of payment for supplies delivered.

MARKET ORDER: A requisition from a production unit (a school or central kitchen) stating the quantity of foods or supplies to be purchased.

NET WEIGHT: The weight of a product and its packing medium, exclusive of its container.

PERPETUAL INVENTORY: A continuous record of food and supplies purchased (in use, in storage, or as used).

PHYSICAL INVENTORY: A periodic physical count of all items in the storeroom or warehouse.

PIE PACK: Usually refers to the lowest grade item; but often heavy pack and/or solid pack are called pie pack. It would be preferable to refer to the type of pack by syrup (giving density), water, solid pack, or heavy pack.

PURCHASING AGENT: Any individual who is officially designated by the school system or board to contract for necessary supplies, including food, equipment, and services.

PURCHASE ORDER: A summary of market orders from individual schools, or production units, specifying the quantity and quality specifications for each item needed, as well as the desired date of delivery.

PURVEYOR: A possible or potential supplier of the items listed on a purchase order or indicated in a specification.

QUOTATION: An informal notice by a vendor to the purchaser of conditions and prices under which the vendor will furnish foods, equipment, supplies, or services.

SPECIFIC GRAVITY: The ratio of a product's density to the density of pure water when both are obtained by weighing in air.

SYRUPS: Syrups may be water or juice; plain, slightly sweetened, light, medium, heavy or extra-heavy. There are no general standards for syrup densities. Standards are set for specific fruits. Because sugar strengthens cellulose, fruits canned in high density syrups are usually more firm.

SOLID PACK: A style of pack which has no liquid added to the product for processing.

SPECIFICATIONS: A description of food, equipment, supplies, or services which set forth in a clear and concise manner the characteristics of the items to be purchased and the conditions under which the purchase will be made.

VENDOR: A possible or potential supplier of the items listed on a purchase order or indicated in a specification.

NOTE: There are a variety of pamphlets, books, and magazines available to assist with the procurement of food and supplies. The following two suggested items are easily obtained at little or no cost.

Food Purchasing Pointers For School Food Service, United States Department of Agriculture, Food and Nutrition Service, Program Aid No. 1160, Washington, D.C. 20402

Food Buying Guide For School Food Service, U. S. Department of Agriculture, PA 1257, U.S. Government Printing Office, Washington, D. C. 20402

SECTION IV
(Part 2)
QUANTITY FOOD PURCHASING
(USDA DONATED FOODS)

Page

I. United States Department of Agriculture Donated Foods 167
II. USDA Donated Food Instructions 167
    Application and Agreement for UDSA Donated Foods (Sample No. 1) 172
    Inventory Form USDA Donated Foods (Sample No. 2) 174

USDA DONATED FOODS

I. UNITED STATES DEPARTMENT OF AGRICULTURE DONATED FOODS

A. The United States Department of Agriculture (USDA) offers available foods to the Oklahoma Department of Human Services.

1. USDA pays for processing and packaging of foods and for transporting them in carload lots to receiving points chosen by state agencies.
2. The donation is intended to create additional food use and, at the same time, improve the diets of children by helping to provide wholesome, appetizing meals for children in schools.

B. USDA acquires foods for donation under three authorizations.

1. Some foods are acquired under Section 6 of the National School Lunch Act specifically for schools participating in the National School Lunch Program.
2. Other foods are purchased under the surplus-removal program as authorized in Section 32 of Public Law 320.
3. Still other foods are acquired through price-support obligations and are donated according to Section 416 of the Agricultural Act of 1949.

C. Food purchases are made through competitive bidding by food packers and processors.

1. Invitations to bid and awards of sales to eligible bidders are publicly announced.
2. No discrimination against any person because of race, color, or national origin may be exercised in the distribution of these foods.

D. To help assure the greatest benefit from donated foods, The Oklahoma Department of Human Services in cooperation with USDA, provides schools with information on storing, handling, and preparing foods.

E. Donated foods for National School Lunch Programs may change in variety from time to time.

1. Price-support and surplus-removal operations provide foods that vary according to market conditions.
2. Consumer and Marketing Services of USDA selects foods purchased with National School Lunch Program Funds.
3. Selections are based on:
   a. Nutritional needs of the child.
   b. Recommendations of the school food service program officials of various states.
   c. Market supplies and prices.

II. USDA DONATED FOOD INSTRUCTIONS

A. The following instructions are excerpts from "The Information Bulletin And Instruction Guide Of The Oklahoma Department Of Human Services":

1. Participation.
   a. The participation for any school operating under the National School Lunch Program is certified to the Department of Human Services by School Lunch Section of the Oklahoma Department of Education.
   b. All schools participating in the National School Lunch Program should submit any request for correction of participation data to the School Lunch Section.
   c. Other schools correspond directly with the Department of Human Services.

2. Commodity contracts.
   a. Schools participating in the National School Lunch Program are provided "Application and Agreement for USDA Donated Foods," Form (C-S-34) on which to complete a Commodity Contract with the Department of Human Services upon certification by the School Lunch Section.
   b. Schools operating the limited School Lunch Program, Section 32, desiring to receive commodities should send their application for Commodity Contract and certify their participation data through the School Lunch Section and the Department of Human Services.
   c. All contracts are designated to expire on October 31st following the date of the contract.
      (1) Forms C-S-34 for completing a new contract are regularly furnished each school early in October so that the contract can be completed, and in effect on November 1st.
      (2) Schools must have a valid contract in order to receive commodities.
3. Certificates of Authority. Each school is required to have an authorized representative for matters pertaining to Donated Foods.
   a. Forms for completing a "Certificate of Authority," Form C-S-33, are mailed to each school district along with the forms for the contract.
   b. At any time a school board desires to change the certified authority, an application must be made to the Department of Human Services and a "Certificate of Authority," Form C-S-33, completed.
4. Allocation of commodities.
   a. Commodities are allocated to schools on an "offer and acceptance" basis with the exception of Section 6 items purchased from the National School Lunch appropriations.
   b. Section 6 items are allocated as they become available to schools participating in the National School Lunch Program on the basis of the certified or approved participation.
5. Distribution.
   a. An initial distribution, consisting of two–three months' supply of both regular and perishable commodities, is made in September to participating schools.
   b. The distribution will be made in accordance with requests submitted at the close of school the previous year as well as average utilization rate for the previous year, less any excessive amounts shown on hand.
   c. Additional allocation will be made periodically on an "offer and acceptance" basis and delivered according to schedules supplied to the schools at the beginning of the school term.
6. Notice of allocation and arrival.
   a. Schools will be notified of pending distribution by means of a form, "Notice of Allocation and Distribution Schedule."
      (1) The form includes the same information as the invoice.
      (2) It is addressed to the certified authority.
      (3) The form is mailed from the County Director of the Department of Human Services at least three days in advance of the date that delivery will be made.
   b. Every reasonable effort will be made to deliver the commodities to the school designated on the invoice; however, if the school does not obtain commodities on the day of distribution or contact the office of the county director and make arrangement for the same, the commodities may be transferred to other schools.

c. Procedures related to school responsibility.

    (1) It is essential that participating schools cooperate in picking up commodities assigned to them at the county distributing point.
    (2) The designated days and hours must be strictly observed to protect perishable commodities.

7. Accepting delivery: Commodities will be consigned to the schools by means of an invoice.

    a. The certified authority or the re-delegated authority must sign the invoice acknowledging receipt of the commodities.
    b. Recognizing that the authorized representative may not always be able personally to accept delivery of the commodities, a "Re-delegation of Authority," Form S-14, is provided to all schools.
    c. This form must be used each time any person other than the certified authority is designated to accept delivery of commodities consigned to the school.
    d. The certified authority must complete the form, personally sign it, and have the re-delegated authority sign it prior to the time of arrival at the point of distribution of commodities.
    e. The re-delegated authority must present the "Re-delegation of Authority," Form S-14, to the county distributor to receive the commodities.

8. Receipting for commodities.

    a. The certified authority or the re-delegated authority will check the commodity items with the invoice to determine that all items consigned to the school according to type and quantities have been received; after which two copies of the invoice will be signed.
    b. The Department of Human Services will exercise all caution to prevent the occurrence of errors; but in the event there is a shortage of food consigned to a school, the county director will note the discrepancy in the remarks column on the invoice and on a "Known Gain and Loss Statement," Form S-18, covering the amount not received by the school.
    c. *The school's representative should not sign the invoice until a completed copy of the Form S-18 is attached to the invoice.*

9. Rejection of allocation.

    a. The school may reject all or part of any item allocated. The invoice will be signed in the usual manner; and the county distributor will issue a "Transfer Slip," Form S-16, for the items not accepted.
    b. The rejected items may be transferred by the commodity distributor directly to another eligible outlet.

        (1) These items will be transferred to the country director if an outlet is not available.
        (2) They may be held at the storage place until such time as commodities are transferred.

10. Transfers.

    a. Commodities may be transferred from one recipient agency to another, from a recipient agency to the county director, or from the county director to a recipient agency.
    b. It is necessary that a "Transfer Slip," Form S-16, be completed in each case.
    c. The county director has a supply of transfer forms and will assist in completing them in accordance with the instructions.
    d. The consignee *must be* eligible to receive the type of commodity that is being transferred.

11. Lost, spoiled, or damaged commodities.

a. Schools are financially responsible for commodities lost through spoilage or theft due to negligence or failure to provide adequate protection in the way of proper storage or security.

(1) If a substantial loss of commodities due to spoilage, infestation, fire, or theft occurs, it should be promptly reported directly to Food and Nutrition Service, Department of Human Services, together with a full explanation of the circumstances connected with the loss.

(2) Damaged commodities should be inspected by the local health officer or sanitarian and disposition made in accordance with his instructions.

b. Losses occurring as a result of theft or break-in should be investigated by local peace officers and a copy of their report enclosed with the report of loss.

c. A report of loss by fire should include a statement of the fire chief or other official who investigated the fire.

12. Inventories.

a. The inventories indicating the amount of the various items of commodities on hand and the length of time they will last are vital reports.

b. The inventory reports together with records of school's average daily participation are the only basis by which fair and equitable distribution of foods can be made to the various schools.

c. Allocations of USDA Donated Foods to the State of Oklahoma are based largely on information gathered from these inventories.

d. Schools are required to submit inventory reports during the school year whenever requested by the Department of Human Services.

(1) "Inventory Reports," Form C-S-17, will be mailed to each school with instructions for completion when an inventory report is required.

(2) The inventory reports are due in the Department of Human Services office within five days following the date inventory is to be taken.

13. Special distributions.

a. There will be occasions when highly perishable commodities will be allocated to the schools.

(1) They will have been stored at a low degree temperature prior to distribution to the schools.

(2) It will, therefore, be absolutely necessary that schools arrange to accept delivery of these items at the exact time specified in the notice of arrival.

(3) Notifications will be mailed sufficiently in advance of the arrival to permit schools to provide proper storage for the commodities being distributed.

b. The items will not be distributed at a regular distribution but will be items for special delivery.

14. If schools discontinue participation in the School Lunch Program, they must at the same time also notify the Department of Human Services.

15. Storage requirements.

a. All USDA Donated Foods are of good quality and are purchased under government inspection.

b. Careful consideration must be given to providing adequate storage facilities.

c. Schools must ensure that all foods whether USDA Donated or locally purchased will have storage facilities to maintain high quality and nutritive value.

d. Temperature, humidity, ventilation, rodents, and insects must be controlled throughout the storage period.

16. Records, such as invoices, transfers, and receipts, must be maintained on file for a period of not less than three years.
17. Inspections
    a. The Department of Human Services maintains a staff of inspectors to visit each school at least once during the school year.
    b. Staff visits are for the purpose of ascertaining if the school meets the requirements of the program and is operating in accordance with the terms of the agreement.
    c. Inspectors will also assist the schools in any way to benefit the program.
18. Disaster feeding.
    a. In case of disaster caused by floods, fires, hurricanes, explosions, etc., Section 32 and 416 items may be issued.
    b. Section 6 items may be issued, but must be paid for or replaced following the disaster by the using organization.
19. Commercial contractual agreements:
    a. The Department of Human Services has made a limited number of agreements with commercial contractors for the processing of some USDA Donated Foods.
    b. For information, contact the Food and Nutrition Service Director.

B. The Food and Nutrition Services, Oklahoma Department of Human Services, has current program information. Inquiries should be directed to:

Food and Nutrition Service Director
Department of Human Services
1700 N. Broadway
Oklahoma City, Oklahoma 73103

Telephone: (Area Code 405) 521-3581

C. On the following pages are samples of:

1. Application and Agreement for USDA Donated Food (C-S-34) Sample No. 1
2. Inventory of USDA Donated Foods (C-S-17) Sample No. 2

STATE OF OKLAHOMA
DEPARTMENT OF HUMAN SERVICES

Application and Agreement for USDA Donated Food

Agreement Number ____________________ APPLICATION

(SAMPLE NO. 1)

Application is made by ______________________________ (referred to herein as the Recipient Agency) of (Address) ______________________________ for USDA Donated Foods made available to the State Department of Human Services (referred to herein as the Distributing Agency) by the U. S. Department of Agriculture under the conditions provided herein.

The Recipient Agency is operating a non-profit school lunch program under the following Classification:

( ) National School Lunch Program (Sec.6) ( ) Limited Cooking Program (Sec.32 Cooking)

AGREEMENT

The Recipient Agency agrees to the following terms and conditions:

1. That the donated foods received under this Application and Agreement will be used only in connection with Recipient Agency's established feeding operations for the sole benefit of persons served or assisted by the Recipient Agency, and will not be sold, exchanged or otherwise disposed of without authority of the Distributing Agency. Donated foods may be transferred between agencies upon authorization of the Distributing Agency if determined to be in the best interest of the distribution program.
2. There will be no discrimination nor segregation between paying and non-paying persons.
3. The Recipient Agency represents that its feeding operations are not now conducted by a food service or management company and will not be so conducted without the prior approval of the Distributing Agency. Donated foods will not be accepted by the Recipient Agency before approval is obtained.
4. Reports will be furnished as required by the Distributing Agency and accurate records of donated foods received, such as shipping document, invoices and receipts will be retained for a period of three years from the close of the Federal fiscal year to which they pertain. (Federal fiscal year begins July 1 and ends on June 30 of the succeeding year.)
5. Adequate facilities will be provided by the recipient agency for the handling, storing and use of donated foods. The facilities to be such as to properly safeguard against theft, spoilage and other loss. The recipient agency agrees to abide by the instructions and regulations issued by the Distributing Agency and the U. S. Department of Agriculture regarding the storage, handling and utilization of donated foods.
6. The governing body assumes full responsibility for carrying out the terms and conditions of this Agreement and will reimburse the Distributing Agency for donated foods improperly used, improperly disposed of, lost or damaged through its failure to provide proper storage, care, or handling. If donated foods charged to the account of the Recipient Agency are lost or damaged while in the hands of a warehouseman, carrier, or other person, the Recipient Agency will take all action necessary to obtain restitution.
7. Normal expenditures for food will not be reduced because of the receipt of such donated foods, except that this condition does not apply to Section 6 donated foods distributed to schools participating in the National Lunch Program.
8. Available donated foods will be issued on a pro-rata basis as they become available and will be receipted for by a representative of the Recipient Agency. If the Recipient Agency has donated foods on hand which it cannot efficiently utilize, it will request instructions from the Distributing Agency for disposition of such donated foods.
9. The contracting official(s) will designate through "Certificate of Authority", the person responsible to the Distributing Agency for proper and adequate handling, storage, accountability and utilization of the donated foods.
10. Representatives of the State Department of Human Services and of the U. S. Department of Agriculture may inspect donated foods in storage or the facilities used in the handling or storage of such donated foods, and may inspect and audit all records, including financial records and reports pertaining to the program at any reasonable time.
11. Donated foods lost for any reason or which are found to be damaged or out-of-condition will be reported promptly to the State Department of Human Services and out-of-condition donated foods will be disposed of in accordance with instructions of the Distributing Agency. Complaints received in connection with the use of donated foods will also be reported promptly.
12. Either party hereto may terminate this Agreement by giving 30 days notice in writing to the other party. It is further agreed by the Recipient Agency that failure to comply with the provisions of this Agreement or any instructions or procedures issued in connection herewith, or any agreements entered into pursuant hereto, may, at the discretion of the State Department of Human Services and/or the United State Department of Agriculture, disqualify the Recipient Agency from further participation in the distribution program. Reinstatement may be made at the option of the Department of Human Services and/or the United States Department of Agriculture. Disqualification shall not prevent the Department of Human Services from taking any other legal action through other available means when considered necessary.
13. Recipient Agency assures the United States Department of Agriculture and the state distributing agency that it now complies with and shall in the future comply with all requirements imposed by or pursuant to the Civil Rights Act of 1964 and the USDA Regulations (7 C.F.R. Part 15), including any subsequent amendments, issued to effectuate that Act. Compliance will be consistent with the objective that no person in the United States shall, on the ground of sex, race, color, religious creed, political belief, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity of recipient agency to which assistance is provided by the USDA. Recipient agency agrees to be obligated by this assurance as long as it receives assistance hereunder or retains possession of any assistance provided by the USDA or the state distributing agency. Should recipient agency fail to comply with the assurance, the United States or the state distributing agency shall have the right to seek its enforcement by judicial or any other means authorized by law. Federal financial assistance is extended under this agreement in reliance on the representations made herein.

Okla. DHS Revised 2-80 C-S-34

(SAMPLE NO. 1, REVERSE SIDE)

(Name of Recipient Agency) ______ (Address of Recipient Agency) ______ (County)

(President or Chairman) ______ (Secretary or Clerk)

Approved for the period ______ to ______

State Department of Human Services ______ (Programs Administrator: Food and Nutrition Services Unit)

Approved ______ (Date) ______ Director of Human Services

SCHEDULE A

Name of School (1)	Address (2)	Approximate closing date of lunchroom for Summer vacation (3)

OKLA. DHS Revised 2-80

INVENTORY

STATE OF OKLAHOMA
DEPARTMENT Of HUMAN SERVICES
USDA DONATED FOODS ONLY

(SAMPLE NO. 2)

Name ______________________________ County ______________

Address ____________________________ Date ______________

Column 1			Column 2
DONATED FOODS			AMOUNTS
Applesauce		Apple Juice	Cans
Beans, Dry (All Kinds)			Pounds
Beans, Green, Canned	Cans	Frozen	Pounds
Beans, Vegetarian, Cnd.			Cans
Beef, Canned in Natural Juice			Cans
Beef, Ground, Frozen			Pounds
Blackeyed Peas, Canned			Cans
Bulgur			Pounds
Butter			Pounds
Cheese, Process		Mozzarella	Pounds
Chicken, Cut-Up, Frozen			Pounds
Corn, Canned	Cans	Frozen	Pounds
Cornmeal			Pounds
Cranberry Sauce			Cans
Egg Mix			Packages
Flour, White			Pounds
Flour, Whole Wheat			Pounds
Macaroni			Pounds
Milk, Dry			Pounds
Orange Juice, Frozen		Canned	Cans
Peaches			Cans
Peanut Butter, Smooth		Chunky	Cans
Peanut Granules			Cans
Roasted Peanuts			Cans
Pears			Cans
Peas, Canned	Cans	Frozen	Pounds
Pineapple			Cans
Pork, Canned	Cans	Frozen Ground	Pounds
Potato Flakes, Dehydrated			Packages
Potato Rounds			Packages
Potatoes, French Fried, Frozen			Packages
Poultry, Boned, Canned			Cans
Raisins			Pkgs. or lbs.
Rice			Pounds
Rolled Oats		Rolled Wheat	Packages
Salad Oil			Gallons
Shortening			Pounds
Spaghetti			Pounds
Sweet Potatoes, Syrup		Instant	Cans
Tomato Catsup		Tomato Paste	Cans
Tomatoes		Tomato Juice	Cans
Turkey, Frozen		Turkey Rolls	Pounds
Mixed Vegetables, Frozen			Pounds

Note: An accurate Inventory is necessary for proper allocation of Donated Foods. Please include USDA Donated Foods in Commercial Storage.

Okla. DHS Revised 4-80

Certified Authority ______________

SECTION IV
(Part 3)
INVENTORY CONTROL

Page
I. Inventory Defined 177
II. Food and Supply Inventories 177
    One Item Perpetual Inventory (Sample No. 1) 179
    Freezer Perpetual Inventory (Sample No. 2) 180
    Storeroom Check-Out (Sample No. 3) 181
    Three Year Inventory Book Pages (Sample No. 4 and 5) 182
III. Equipment Inventory 184
    Record of Equipment (Sample No. 6) 185
    Equipment Upkeep and Services Record (Sample No. 7) 185
IV. Equipment Depreciation for Non-Expendable Equipment 186
V. Computing Depreciation on Non-Expendable Equipment 186
    Factor Chart for Computing Estimated Acquisition Cost 187
    Schedule for Montly Depreciation Factors for Non-Expendable Equipment 188
    Non-Expendable Equipment Schedule (Sample No. 8) 190

INVENTORY CONTROL

I. INVENTORY DEFINED

A. The word "Inventory" can be used to mean several different things.

1. It can be used to refer to the stock on hand at a particular time.
2. It may be used to mean itemized lists of goods or property.
3. In connection with financial statements and accounting records, the reference may be to the dollar amount assigned to the stock of goods at a particular time.

B. Inventories in School Food Service consist of food, supplies, and equipment.

1. Control of receiving, storing, and issuing of food and supplies is one important key to controlling costs.
2. These procedures are direct responsibilities of each school food service manager.

II. FOOD AND SUPPLY INVENTORIES

A. Inventory methods.

1. A *perpetual inventory* is a running record of all food and supplies on hand.
   a. Withdrawals are recorded daily so that at a glance complete information is available on each item in stock.
   b. This method is often used by larger systems who have one person responsible for checking all supplies out of the storeroom by requisition.
2. A *physical inventory* is an actual count of goods on hand at the end of a time period. A price list is used to compute the value of inventory on hand.

B. Inventory records and management.

1. Inventory records.
   a. Aid in purchasing.
   b. Control the usage rate of items.
   c. Provide an analysis of the consumption or use of items.
   d. Provide additional assurance that quantity of food is available to meet menu requirements and a reserve food supply exists.
   e. Help avoid being overstocked or understocked.
   f. Prevent food deterioration and replacement cost.
   g. May be used for insurance purposes in case of fire or theft.
   h. May be used in developing meaningful cost analysis.
2. Inventory management.
   a. Allows ordering in advance for cycle menus.
   b. Determines amount of inventory needed in both dry and refrigerated storage based on available space.
   c. Considers frequency of deliveries.
   d. Simplifies the inventory procedure by arranging alphabetically:
      (1) Purchased Foods.
      (2) Supplies.
      (3) USDA Donated Foods.
   e. Assures chemicals are stored in a separate area or storeroom.
   f. Arranges the placement of non-food supplies in a separate storeroom or area when facilities permit.

C. Implementing and maintaining a perpetual inventory.

1. The first step is taking a physical inventory.
2. Record inventory information in a perpetual inventory book or on a card file system, using one page or one card per item.
3. Index inventory:
   a. By storeroom or freezer.
   b. By categories.
      (1) Purchased.
      (2) Supplies.
      (3) USDA Donated Foods.
4. Perpetual inventory forms will include:
   a. The name of the item.
   b. The date of delivery.
   c. Amount received.
   d. Name of company and brand name.
   e. Cost as listed on invoice per purchased unit.
   f. Amount issued daily or weekly in food preparation. (Sample No. 1 in this section.)
5. Use a daily checkout sheet in absence of a storeroom employee.
   a. To assure accuracy:
      (1) Post a checkout sheet on the door of all freezers; chest type, upright and walk-in. (Sample No. 2 in this section.)
      (2) Each person is responsible for noting on the perpetual inventory forms, food items and quantities withdrawn from stock.
   b. At the end of the day or week information is added to perpetual inventory cards by the manager. (Sample No. 3 in this section.)

D. Maintaining a physical inventory.

1. The beginning (opening) inventory is the value of food and supplies on hand at the beginning of the month.
2. The value of the food on hand at the end of the month is the ending (closing) inventory.
3. The profit and loss will show the beginning inventory value plus purchases, minus the ending inventory value, as the cost of food and supplies used for the month.
4. Organization for taking a physical inventory.
   a. Two people can take inventory very efficiently, with one counting and the other tabulating.
   b. Prices put on the cases are helpful.
   c. It is customary to use the original purchase cost of the items rather than the current market price.
   d. For convenience and accuracy, the storeroom and inventory sheet should be:
      (1) Organized by categories.
      (2) Arranged alphabetically.
      (3) In the same sequence.
   e. Any substantial amount of food in the refrigerators should be inventoried and costed.
5. Inventory book: The School Lunch Section has made inventory books available to all schools.
   a. These books provide food service managers with a systematic method for taking and maintaining a complete inventory record of purchased food and supplies and USDA Donated Foods for three years.

b. An incorrect record of inventory can mean the difference between profit or loss and will reflect an incorrect food cost.

c. Items are grouped by food categories.

  (1) All fruits, for example, are in one section, separated into canned, frozen, dehyrated, and dried.
  (2) This arrangement is easy to use when preparing purchase orders.

d. There are only three columns in the Inventory Book to complete each month. See Sample No. 4 in this section.

  (1) The *amount on hand* should be number of single units, such as 21 cans applesauce (not 3 cases + 3 cans); 30 pounds frozen strawberries (not 1 can); 9 pounds cherry gelatin (not 2 boxes).
  (2) The price is the *unit price*, such as $1.85/#10 can; 40¢/lb.; or $1.50/qt. jar. Items such as eggs would be priced per dozen, mustard might be per gallon, vanilla per quart, but the majority of items will be priced per #10 cans or per pound.
  (3) *Total value* is obtained by multiplying amount on hand by unit price.

e. Additional information may include the following:

  (1) Adding information concerning servings per unit next to the name of the food in the item column has been found to speed food costing procedures.
  (2) Adding a cost per serving column in the unit price column may also be helpful. (see Cost Control, Section V, Part 2 of this handbook, Sample No. 3.)

f. The last section in the inventory book is for USDA Donated Foods.

  (1) The section is divided into Meat/Meat Alternate, Fruits, Vegetables and Staples.
  (2) Food item columns, due to the variety of foods received, are blank and may be filled in according to foods received.
  (3) USDA Donated Foods should also be arranged alphabetically, but stored and inventoried separately from purchased foods.
  (4) *The value of USDA Donated Food is not used to determine cost value of foods used when submitting claims for reimbursements.*

g. Monthly inventory totals obtained from the Total Value Columns should be recorded in the front of the Inventory Book in the appropriate columns of the "Monthly Record of Inventory Value." (Sample No. 5 in this section.)

ONE ITEM PERPETUAL INVENTORY (SAMPLE NO. 1)

_______________________ School

Date	Received	Issued	On Hand	Unit Price	Value	
ITEM:		BRAND:		COMPANY:		UNIT:

FROM ______________________ TO ______________________
Mo. Day Mo. Day

FREEZER PERPETUAL INVENTORY (Sample No. 2)

ITEM		MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY		
	BAL	IN	OUT	BAL	IN	OUT	BAL	IN	OUT	BAL	IN	OUT	BAL	IN	OUT	BAL

STOREROOM CHECK-OUT (SAMPLE NO. 3)

FROM ______________________ TO ______________________
Mo. Date Mo. Date

AMOUNT WITHDRAWN

ITEM	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	TOTAL

THREE YEAR INVENTORY BOOK PAGE (SAMPLE NO. 4)

ITEM	MONTH____ DATE____			MONTH____ DATE____			MONTH____ DATE____		
CANNED FRUITS:	AMT. ON HAND	UNIT PRICE can/lb. doz/unit	TOTAL VALUE	AMT. ON HAND	UNIT PRICE can/lb. doz/unit	TOTAL VALUE	AMT. ON HAND	UNIT PRICE can/lb. doz/unit	TOTAL VALUE
Apples, sliced									
Applesauce									
Apricots, pie									
Cherries									
Cherries, Maraschino									
Cranberry Sauce									
Fruit Cocktail									
Mandarin Oranges									
Peaches, halves									
Peaches, sliced									
Pears, halves									
Pineapple, crushed									
Pineapple, sliced									
Pineapple, tidbits									
Plums, purple									
Pumpkin									
TOTAL									

THREE YEAR INVENTORY BOOK PAGE (SAMPLE NO. 5)

MONTHLY RECORD OF INVENTORY VALUE

YEAR: 1980–81

MONTH		TOTAL VALUE OF PURCHASED FOOD (pages 1–12)		TOTAL VALUE OF SUPPLIES (pages 13–14)		TOTAL VALUE OF USDA DONATED FOODS (pages 15–17)

YEAR: 1981–82

MONTH		TOTAL VALUE OF PURCHASED FOOD (pages 1–12)		TOTAL VALUE OF SUPPLIES (pages 13–14)		TOTAL VALUE OF USDA DONATED FOODS (pages 15–17)

YEAR: 1982–83

MONTH		TOTAL VALUE OF PURCHASED FOOD (pages 1–12)		TOTAL VALUE OF SUPPLIES (pages 13–14)		TOTAL VALUE OF USDA DONATED FOODS (pages 15–17)

III. EQUIPMENT INVENTORY

A. Regulations on full cost accounting indicate that accurate records of equipment be maintained.

1. Two major categories of equipment are as follows:
    a. Expendable equipment.
        (1) Equipment having a unit cost of less than $300 and a life expectancy of less than one year.
        (2) Generally included in this category are such items as cutlery, flatware, dishware, pots, pans, and dishracks.
    b. Nonexpendable Food Service equipment is equipment for the preparation, serving, storage, and transportation of food with an acquisition cost of $300 or more and a life expectancy in excess of one year.
2. Accurate records of equipment inventories are important for replacement purposes in case of fire or theft. Records of equipment should include:
    a. Date of purchase.
    b. Model and serial number.
    c. Energy source.
    d. Cost.
    e. Vendor.
    f. Warranties: date recorded and expiration date. (Sample No. 6 in this section.)
    g. Services and repairs of the equipment. Records of limited service and repair on equipment may indicate replacement with the same brand when changes or additions are desired. (Sample No. 7 in this section.)
    h. Service manuals detailing preventive maintenance.
3. Expendable equipment (less that $300) should be inventoried at least annually.
    a. For purpose of replacement in case of fire, theft or breakage.
    b. To maintain standard of operation in relation to quantity on hand.
    c. To assist with inventory of net worth.

B. Duplicate records of equipment information should be filed in a separate building for purposes of insurance.

RECORD OF EQUIPMENT (Sample No. 6)

Item:____________________ Date of Purchase:__________

Location Used:______________________________

Firm:______________ Address:____________________

Manufacturer:____________________ Model No.________

Installed By:____________________ Serial No.________

New:____________Used:____________Cost:____________

Operation: Hand____ Electric________ Gas______Steam______

Number of Hours Used Per Day:____________Length of Warranty:______

Date Warranty Recorded:____________Expiration Date of Warranty______

Motor: A.C.__________D.C.__________H.P.__________

Voltage:__________Cycle:__________Phase:__________

EQUIPMENT UPKEEP AND SERVICES RECORD: (Sample No. 7)

DATE	SERVICES	REPAIRS	COST		TOTAL
			PARTS	LABOR	

IV. EQUIPMENT DEPRECIATION FOR NON-EXPENDABLE EQUIPMENT

A. The full cost concept provides that depreciation of nonexpendable food preparation, serving and related equipment, including transportation equipment is:

1. Considered an allowable cost element in computing the cost of a school lunch and breakfast.
2. Allowable whether or not the cost of depreciation is actually set aside for replacement of equipment.

B. Examples of non-expendable equipment

Baker's Tables
Booster Heaters
Carriers
(hot and cold foods)
Carts
Cash Registers
Compactors
Cutters and Choppers
Deep Fat Fryers
Dishtables
Dishwashers
Dollies
Electronic Ticket Tabulators
Exhaust Ventilators
Freezers
Garbage Disposals
Hot & Cold Holding Cabinets
Kettles
Milk Coolers
Milk Dispensers
Mixers
Mobile Folding Tables
(with chairs or benches)
Ovens
Proof Cabinets
Racks
Ranges
Refrigerators
Sanitizing Equipment
Scales
Serving Counters
Shelving
Sinks
Slicers
Special Purpose Vehicle
(to the extent that it is used for
transporting food)
Standard Dining Tables
(with chairs)
Steam Generators
Steam Tables
Steamers
Tilting Braising Pans
Worktables

C. Selected items of nonexpendable equipment necessary to the operation of a food service facility that by their nature could be part of the building (for example: built-in, walk-in refrigeration, boilers and ventilation hoods) are allowable costs. They should be included as equipment and depreciated accordingly.

D. When automotive equipment is provided from a central source or shared with other users, such costs are allocated on a percentage basis.

V. COMPUTING DEPRECIATION ON NON-EXPENDABLE EQUIPMENT

A. Food service equipment over 12 years old is considered fully depreciated and *cannot* be included in the value of equipment on hand.

B. In order to compute depreciation on a monthly and/or annual basis, the following information is required:

1. Acquisition cost is the net cost of equipment acquired including any attachments, accessories, or auxiliary apparatus necessary to make it usable.
2. Normal installation and delivery costs would be the cost of making the necessary hookup to existing utilities adjacent to the equipment being installed.
3. The total cost of equipment purchased with Food Service Equipment Assistance Funds (Nonfood Assistance) or other federal funds, is not to be included; only, that portion provided by the school or district is depreciable. For example: If 75% of the cost was provided by Food Service Equipment Assistance Funds, then 25% of the cost may be depreciated.

C. When the original acquisition cost is unknown, the following procedure may be used to estimate acquisition cost.

1. Obtain the current cost of replacing each item of food service or major kitchen equipment that will be used in the program for which the acquisition cost is unknown. This can be obtained from a local supplier, based on the item's cubic footage, energy source, etc.
2. Determine the age of each item of food service or major kitchen equipment for which an estimate is to be made.
3. Locate the multiplication factor in the chart below based on the age as determined.

FACTOR CHART FOR COMPUTING ESTIMATED ACQUISITION COST

AGE IN YEARS	1	2	3	4	5	6	7	8	9	10	11	12
MULTIPLICATION FACTOR	1	.96	.92	.88	.84	.80	.78	.76	.74	.72	.70	.68

4. The estimated original acquisition cost is found by multiplying the current cost, as determined in step 1 by the multiplication factor, as determined in steps 2 and 3. If the estimated original acquisition cost determined is less than $300, do not include on non-expendable equipment schedule.
   a. An example might include: To replace a 20 quart electric bench mixer, the current cost would be $1,200 from the local supplier. It is determined that this mixer was acquired seven years ago. The estimated original acquisition cost is determined as follows:

      $1,200.00 × .78 = $936.00

   b. The acquisition cost to be reported is $936.00. The mixer would be depreciated for the five remaining years of its 12-year life expectancy.

D. Compute depreciation of newly purchased, rebuilt, or used equipment.

1. Provisions for depreciation of equipment should not differentiate between a new item and one which has been used.
2. Newly-acquired used equipment should be listed on the schedule for depreciation on a 12-year life expectancy basis.

E. Compute depreciation of rebuilt equipment.

1. Add the cost of rebuilding the non-expendable equipment to the remaining depreciable value and list again on the equipment depreciation schedule with a 12-year life expectancy. Do not depreciate an item while it is out of service.
2. The acquisition cost to be entered is a calculated amount to be determined as follows:
   a. Determine the original acquisition cost.
   b. Determine the time elapsed in years between the time the equipment was originally put into service and the time it was taken out of service for rebuilding. Do not count the period that the equipment was taken out of service.
   c. Multiply the result of Step (b) above by the following:
      (1) Non-expendable food service equipment .042
      (2) Heavy Trucks .083
      (3) Light Trucks .125
   d. Subtract the amount determined in Step (c) from 100% and multiply the result by the figure as determined in Step (a).
      (1) This will be the value of the item at the time of rebuilding.
      (2) If the subtraction results in a figure that is less than zero, the equipment is considered to have a zero value.

    e. The figure obtained in Step (d) is added to the cost of rebuilding including the cost of parts and labor. This will be the acquisition cost to be entered on the Equipment Depreciation Schedule for an additional 12 years.

F. Instructions for non-expendable equipment schedule. (Sample No. 8)

1. Check the type of equipment the schedule includes.
    a. Keep food service equipment, vehicles, and equipment purchased with federal funds on a separate schedule.
    b. Such funds include equipment purchased with Food Service Equipment Funds, Title I Funds, etc.
2. Describe each piece of equipment by name and energy source.
    a. List the oldest equipment first, newest equipment last in order that old equipment may be deleted from the top of the list as expiration dates are reached.
    b. Equipment over 12-years-old is considered fully depreciated and cannot be included on the schedule.
3. Enter serial number and/or size and capacity.
4. Enter the month and year the equipment was put into service. This is the date the life expectancy begins.
5. Enter the acquisition, in-place, cost of the equipment. In cases where the original acquisition cost is not known, follow instructions on estimating cost as discussed in part V-C of this section.
6. Enter expected life termination date:
    a. Food service equipment 12 years.
    b. Light trucks (empty weight less than 13,000 pounds) and tractor units (over the road), four years.
    c. Heavy trucks (empty weight *more* than 13,000 pounds) and trailers, six years.
7. Check the reason for the deletion(s) from the schedule and enter the month and year of the deletion(s).
8. The non-expendable equipment schedule is a PERMANENT SOURCE DOCUMENT and must be retained for future audit for a period of five years after last deletion.
9. Purchase records must be maintained for a period of five years after deletion.

G. Obtain a monthly depreciation figure:

1. Total acquisition costs on the Non-expendable Equipment Schedule. (Sample No. 8, Column 7)
2. Determine the length of service expected annually from the equipment.
3. Multiply by the percentage factor applicable for months in service. (Use Schedule below.)

SCHEDULE FOR MONTHLY DEPRECIATION FACTORS FOR NON-EXPENDABLE EQUIPMENT

.00694	(12-month school term)
.00757	(11-month school term)
.00833	(10-month school term)
.00926	(9-month school term)
.01042	(8-month school term)
.01190	(7-month school term)

Example: The total original cost of all non-expendable food preparation, serving, and related equipment is $25,000 (including installation and delivery cost). The depreciation factor is .00926 per month. (9 claims filed during school year.)

$25,000	—value of equipment
× .00926	—depreciation factor, 9-month school term
$231.50	—monthly depreciation

In this example, $231.50 would be the figure determined from the total on the Equipment Depreciation Schedule and reported as allowable monthly depreciation costs under the full cost concept for each of the nine months.

4. Monthly depreciation for automotive equipment may be determined and added to the total of the Equipment Depreciation Schedule.
5. Monthly depreciation factors for automotive equipment:
   a. *Four-year life expectancy.*
      (1) Light Trucks: (Empty weight less than 13,000 pounds).
      (2) Tractor Units: (over the road)

.02083	(12-month school term)
.02273	(11-month school term)
.02500	(10-month school term)
.02778	(9-month school term)
.03125	(8-month school term)
.03571	(7-month school term)

   b. *Six-year life expectancy.*
      (1) Heavy Trucks: (empty weight more than 13,000 pounds).
      (2) Trailers:

.01389	(12-month school term)
.01515	(11-month school term)
.01667	(10-month school term)
.01852	(9-month school term)
.02083	(8-month school term)
.02381	(7-month school term)

   c. In those instances where automotive equipment is provided from a central source or shared with other users, such costs are allocated on a percentage basis.

NON-EXPENDABLE EQUIPMENT SCHEDULE: (Sample No. 8)

(For equipment with an original cost of $300 or more)

(1) School/District ______________________

(2) Location of Equipment ______________________

TYPE OF EQUIPMENT

MAINTAIN SEPARATE SCHEDULE FOR EACH TYPE INDICATED IN NO. 3 BELOW

(3) ☐ Food Service Equipment ☐ Vehicles ☐ Purchased with Federal Funds

DESCRIPTION	Serial # or Size or Capacity (5)	Month and Year of Purchase (6)	Original Acquisition Cost (7)	Life Termination Date (8)	(9) Deletions from Schedule			
Name of Energy Source (4)					Sale	Storage	Age	Month and Year
		TOTAL						

SECTION V
(Part 1)
SCHOOL FOOD SERVICE BUDGETING

Page
I. Budgeting 193
II. Budget 193
III. Planning 193
IV. Controls to Consider When Planning the Budget 194
V. How to Estimate Lunch Income for the Budget 195

SCHOOL FOOD SERVICE BUDGETING

I. BUDGETING

A. Accurate daily records are necessary:

1. To yield information on which monthly estimates are made.
2. To provide financial control over the program.
3. To balance income with expenditures.

B. Budgeting is a necessary tool for good business management.

II. BUDGET

A. A budget is: A plan for spending expected income in a way that total expenses will not exceed total income.
B. A realistic guide or plan for spending school food service dollars.
C. Planned before spending begins.
D. Planned for a specific period of time (usually a school year).
E. Includes all income and all expenses for all programs under the school food service program.
F. Important because:

1. School food service is "big business".
2. Resources are limited.
3. The program must be operated non-profit for the benefit of participating children. (Income must not exceed expenditures.)
4. Income is derived from federal reimbursement and money received from the paying participant.
5. Meal charges must be maintained at reasonable levels as one means of reaching more children.
6. When expenditures exceed income, consideration should be given the amount the school is willing or able to spend to subsidize the program.
7. Attention should be given to:

    a. Rising food costs.
    b. Rising labor costs.
    c. Impracticability of increasing lunch prices.
    d. Impossibility of decreasing quality or quantity of food served.
    e. Desire for higher quality foods.
    f. Failure of personnel to make maximum use of USDA Donated Foods.
    g. New food products on the market and new types of equipment.
    h. Inexperienced and/or untrained food service employees.
    i. Low participation.
    j. Cost factors in relation to reimbursement.

III. PLANNING

The Budget for the school food service program may include:

A. Estimating the amount of income.

1. Based on income of prior period, the principle changes affecting income are participation, prices, and reimbursement rate.
2. Comparisons should be made on the basis of categories of expense as they relate to income because of the vast difference in size of operations.

B. Using previous year's records and considering anticipated changes, estimate the amount of expenses according to:

1. Food.

    2. Labor.
    3. Other.

- C. Classification of expenditures include:
    1. Food expenses.
        - a. All food and milk.
        - b. Cost of handling, transportation, and warehousing including USDA Donated Foods.
    2. Labor costs.
        - a. Salaries paid to all school food service employees.
        - b. Withholding tax, retirement and/or social security payments, and insurance premiums which may be withheld from the employees' checks.
        - c. Employers' share of retirement, social security, or insurance payments.
        - d. Categorized by programs based upon the number of hours actually spent in each program and the number served.
        - e. Based upon necessary staffing changes.
    3. Other expenses such as payments for miscellaneous supplies and items which are not food or labor.
        - a. Paper goods.
        - b. Cleaning supplies and/or services.
- D. Compute the net gain and determine the operating reserve. Operating reserve should not exceed three month's normal expenses.

IV. CONTROLS TO CONSIDER WHEN PLANNING THE BUDGET

- A. Since a budget is a plan for future need, a period of time for analysis and study is required if it is to become a useful tool of management.
    1. Study the causes and contributing factors if costs deviate from the estimates.
    2. Determine whether the estimate is incorrect or whether a change in operation is indicated.
- B. Availability of USDA Donated Foods affects the margin between income and expenses.
- C. Thorough evaluation of expenditures should be made before increasing the charge of the meal to the paying participant. Higher rates:
    1. May reduce participation which results in less net income.
    2. May put a financial burden on some families with borderline income.
- D. Rising costs affect:
    1. Food.
    2. Labor.
    3. Other.
- E. Other considerations.
    1. USDA standards for School Lunch and Breakfast Programs.
    2. State Agency recommendations for School Lunch and Breakfast Programs.
    3. Minimum standard set forth in the regulations and in agreements entered into between the School Food Authority and the State Agency.
    4. Change in rate of reimbursement.

V. HOW TO ESTIMATE LUNCH INCOME FOR THE BUDGET*

Estimated Number of Lunches to be Served Daily

Students:

Free ____________________

Reduced ____________________

Paid ____________________

Adults:

Paid ____________________

Cafeteria Workers ____________________

Total students and adults ____________________

Estimated Daily Income

Student paid lunches ________ × ________ charge = $ ________

Student reduced lunches ________ × ________ charge = ________

Adult lunches ________ × ________ charge = ________

Number free ________ × ________ Federal Reimbursement = ________

Number reduced ________ × ________ Federal Reimbursement = ________

Total student lunches ________ × ________ Federal Reimbursement = ________

Total student lunches ________ × ________ State Matching = ________

Other Cash income (if any) ________

Total Daily Income **

$ ________

Cash Available for Each Lunch

Total estimated income divided by total number of lunches determines amount available for each meal.

What is your estimate for the amount available to spend for each lunch daily? ________

________ × ________ = weekly ________

________ × ________ = monthly ________

________ × ________ = yearly ________

* A similar procedure applies to estimates for Breakfast.

** To determine the division of income for food, labor, and other transfer the total Daily Income (above) to Estimated total Daily Income (below).

Some suggested percentages that could be used for projecting School Lunch Budgets are:

Food —45 to 50%
Labor—40 to 50%
Other— 5 to 10%

Breakfast menus have less preparation than other meals and the precentages spent for food and labor would be different in most cases, as suggested below:

Food —65 to 75%
Labor—25 to 30%
Other— 3 to 7%

Projected daily lunch/breakfast income below:

	Estimated Total Daily Income**			Estimated Daily Income for Food Labor and Other		Estimated No. of Meals Daily		
Food	$________	× ____ %	=	________	÷	________	= ________	Food Budget/Meal
Labor	$________	× ____ %	=	________	÷	________	= ________	Labor Budget/Meal
Other	$________	× ____ %	=	________	÷	________	= ________	Other Budget/Meal

Total Budget Per Meal ____________________

SECTION V
(Part 2)
COST CONTROL

Page
I. Controlling Cost 199
II. Food Cost 199
III. Pre-Costing Menus By the Recipe Costing Method 199
IV. Post Costing Menus By the Invoice (Inventory) Method 200
V. Management Alone Cannot Control the Cost 201
    Recipe Costing (Sample No. 1) 201
    Menu Pre-Costing Form (Sample No. 2) 202
    Three Year Inventory Book Page (Sample No. 3) 206

COST CONTROL

I. CONTROLLING COST

A. The cost per meal is the:

1. Most widely used tool of management;
2. Includes costs calculated on a per meal basis of:
    a. Food.
    b. Labor.
    c. Supplies.
    d. Operation.
3. The sum of the costs of food, labor, and other expenses divided by the number of lunches served.

$$\text{Per Meal Cost} = \frac{\text{Food} + \text{Labor} + \text{Other}}{\text{Number of Lunches Served}}$$

B. Separate analysis of costs for School Lunch and Schoool Breakfast Programs is necessary to avoid distortion of figures.

C. Cost of food used requires an accurate inventory of food on hand.

II. FOOD COST

A. Controlling the meal cost will provide:

1. The best possible menu within the money allowance for food.
2. Nutritious meals that will be eaten and not thrown away.

B. Estimating the cost of food per meal, often referred to as pre-costing a menu, is a means of:

1. Identifying foods that can be served economically.
2. Predicting total food costs for the meal.

C. Costing usually starts with pre-costing of recipes and then pre-costing menus.

1. One must first know the purchase cost per unit of raw food products and other supplies.
2. The current market value of any USDA Donated Food may be used for pre-costing. This will determine a reasonable price to be used when purchasing, if the food is not available as a USDA Donated Food.

D. Keeping price lists of the same products from various suppliers or vendors aids in an analysis of products for quantity, quality, and cost.

1. Avoid additional refiguring by recording the cost per unit, per pound, per cup, or per ounce.
2. Always work in pencil when making new price lists: this saves time when there is a change in prices.

E. Most managers prefer to combine two methods of costing.

1. Pre-costing; costing recipes.
2. Post costing; costing the amount of food used daily, which is the invoice method.

III. PRE-COSTING MENUS BY THE RECIPE COSTING METHOD

A. Pre-costing is an essential step toward:

1. Estimating expenditures.
2. Setting standards and guides.

3. Providing a basis for economical distribution of food cost throughout cycle menus.
4. Wise purchasing.
    a. The least expensive item may not be the most economical buy.
    b. Comparison of canned, fresh or frozen products is essential.
5. Decreasing daily food costing which:
    a. Aids in curtailing deficit spending.
    b. Promotes efficient use of manager's time.

B. Advantages of food costing by the recipe method:

1. Advance knowledge of the cost of each item on the menu aids in controlling food costs.
2. Costing for 100 portions. (See Sample No. 1.)
    a. Provides a means to allow for participation increases or decreases without refiguring the costed recipe.
    b. Enables management to determine the cost per serving which when multiplied by the number of meals to be served provides the total cost for that item.

C. Control cost while planning the menu.

1. Pre-cost most expensive items first, usually main dishes, and then cost less expensive items.
    a. List main dishes by:
        (1) Cost per serving starting with the most expensive to the least expensive.
        (2) Contribution each makes to the meal:
            (a) Amount of meat/meat alternate.
            (b) Amount of fruit/vegetable.
            (c) Amount of bread/bread alternate.
            (d) Vitamins A and/or C.
            (e) Iron.
    b. Pre-cost a list of vegetables, salads, fruits, and desserts by categories. (See Sample No. 2.)
2. Substitute less expensive for more expensive menu items when the average menu cost exceeds the food allowance. (One may counterbalance the other and make substitutions unnecessary.)

D. Tools needed:

1. The standardized recipe to be used.
2. The Oklahoma Inventory Book (Sample No. 3) to provide:
    a. Current price list of food broken down to unit and possible portion costs.
    b. Easy resource for planners to estimate costs.
3. List of costs of common foods in quantities used.

IV. POST COSTING MENUS BY THE INVOICE (INVENTORY) METHOD

A. Requires knowledge of the amount and cost of each item of food used.

1. This is known as post-costing.
2. Daily calculation is advisable when food costs appear to be uncontrolled.
3. It can be successfully combined with recipe costing.

B. The food cost per meal is determined when total food cost is divided by the total number of meals served.

1. Aids in identifying food costs that are too high.
2. Provides excellent record for controlling financial operation.

C. The Oklahoma Menu Planning Book For Child Nutrition Programs is designed to be utilized for either pre-costing or post-costing.

V. MANAGEMENT ALONE CANNOT CONTROL THE COST

A. Employees must share the responsibilities of controlling cost by:

1. Following standardized recipes exactly.
2. Becoming familiar with the cost of all food items.
3. Avoid wasteful food preparation habits.

B. Enlist the help of all employees to keep inventories current.

RECIPE COSTING CARD (Sample No. 1)

			Cost Card:		Recipe Number______	Serving Size______
Serving Contribution	Ingredient	Weight or Measure	Cost Per Purchased Unit	Cost Per Unit Used	Cost for 100 Portions	Quantity Needed
				TOTAL COST		
					Cost per Serving – ELEM______	SEC______

NOTE: Seasonings and condiments may be costed individually for each recipe if large quantities are used. However, for convenience, it is sometimes recommended that each school establish an average cost per meal for seasonings and condiments to be added to the total meal cost. Included in these categories are: pickles used as a garnish, mustard, catsup, leavenings, salt, pepper and other spices and seasonings.

MENU PRE-COSTING FORM (Sample No. 2)

On the next four pages list the most popular menu items. Also, give the recipe number, the number of meat/meat alternate servings, the number of fruit/vegetable servings, bread/bread alternate and the cost per serving of each item. With this information recorded, it will not be necessary to refer to the recipe file each time a menu item is used.

MAIN DISH

Beef	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.	Poultry	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.
						Fish					
						Pork					
						Other					
Sandwiches											

MENU PRE-COSTING FORM (Sample No. 2) continued

VEGETABLE

Frozen	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.
Canned and Fresh					
Vegetables					

SALADS

Lettuce	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.
Cabbage					
Gelatin					
Other					

MENU PRE-COSTING FORM (Sample No. 2) continued

BREADS

Yeast	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.	Icings and Toppings	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.
Quick											
						Salad Dressings					
Sweet Rolls											
Miscellaneous											

MENU PRE-COSTING FORM (Sample No. 2) continued

DESSERTS

Cookies	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.	Cookies	Rec. No.	M/MA oz.	F/V ¼ c.	B/BA oz.	Cost Per Serv.
						Fruits					
Cobbler, Crisp,											
Fruit Pies											
Cream Pies and											
Puddings											
						Gelatin					
						Cookies					

THREE YEAR INVENTORY BOOK PAGE (Sample No. 3)

When using the Oklahoma Inventory Book as a costing reference, it may be useful to divide the unit price column and add space for portion costs.

ITEM	MONTH____ DATE____			MONTH____ DATE____			MONTH____ DATE____		
CANNED FRUITS:	AMT. ON HAND	Unit price	Portion cost	AMT. ON HAND	UNIT PRICE can/lb. doz/unit	TOTAL VALUE	AMT. ON HAND	UNIT PRICE can/lb. doz/unit	TOTAL VALUE
Apples, sliced									
Applesauce									
Apricots, pie									
Cherries									
Cherries, Maraschino									
Cranberry Sauce									
Fruit Cocktail									
Mandarin Oranges									
Peaches, halves									
Peaches, sliced									
Pears, halves									
Pineapple, crushed									
Pineapple, sliced									
Pineapple, tidbits									
Plums, purple									
Pumpkin									
TOTAL									

SECTION VI
FOOD STORAGE

Page

I. Storage of Food and Supplies 209
  General Temperature Guides For Storing Food 212
  Foods That Give Off Odors and Those That Absorb Odors 213
II. Dry Food Storage Area 214
III. Refrigerated Storage 215
IV. Frozen Food Storage 217
V. Storage Management 218
VI. Storage Housekeeping Practices 219
VII. Care of Food and Storage Facilities During the Summer Months 220

FOOD STORAGE

I. STORAGE OF FOOD AND SUPPLIES

A. Facilities.

1. Keep food safe, wholesome, and appetizing.
   - a. Adequate storage facilities, both dry and refrigerated, are required:
     - (1) To maintain high quality.
     - (2) To retain maximum nutritional value until consumed.
   - b. Careful menu planning is a must.
   - c. Good buying practices must be used.
2. Maintaining peak quality of food provides meals that taste better and are more nutritious.
3. USDA Donated Foods.
   - a. Schools and institutions which accept USDA Donated Foods also accept responsibility to handle and store them properly.
   - b. Failure to handle and store Donated Foods properly may result in:
     - (1) The Department withholding further donations of foods.
     - (2) Requiring restitution for foods that are lost or become spoiled.
4. Locally purchased foods must also be handled and stored properly.
5. Types of storage needed to maintain food and supplies at peak quality are shown in the following chart.

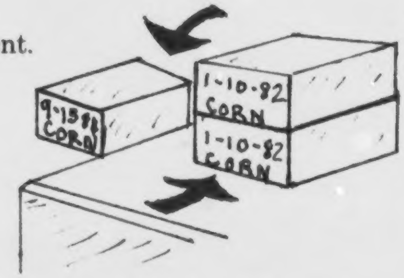
TYPE	TEMPERATURE	USE	CHARACTERISTICS
Dry — Cool	50°F. — 70°F.	Semi-perishable and staple items	Well lighted Dry Well ventilated Easy to clean Well constructed slatted shelves Floor racks Thermometer
Dry	——	Detergents Paper goods	Same as above
Refrigerated	36°F. — 40°F.	Perishables Semi-perishables Raw and cooked foods for short periods of time	Thermometer Adjustable slatted shelves or floor racks
Frozen Food Storage	0°F. or below	Frozen foods	Thermometer Slatted shelves or racks Properly wrapped packages

6. Location of storage area should be:
   a. Adjacent to kitchen area.
   b. Convenient to receiving area.

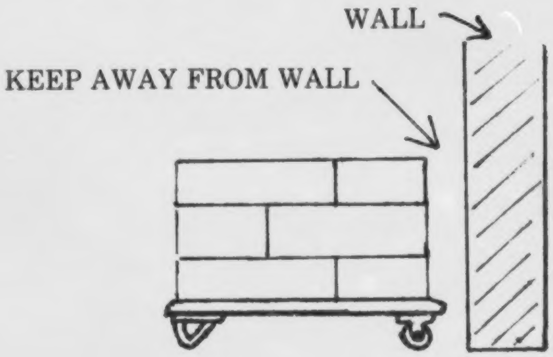
NOTE: For sizes of storeroom, freezer, and refrigerators, refer to the School Food Service Facility Planning and Equipment, Section IX, in this handbook. Schools planning to build or remodel storage facilities should request the USDA Food Storage Guide for Schools and Institutions, PA–403. The School Lunch Section of the State Department of Education will assist local school districts upon request.

B. Arrangement of food in the storeroom.

1. Efficient arrangement of the receiving and food storage areas is of major importance in an economical operation.
   a. Save workers steps and time by:
      (1) The orderly arrangement of functions and equipment.
      (2) Planning of routes.
   b. Backtracking and cross-travel may cause:
      (1) Accidents.
      (2) Costly mistakes.
      (3) Delays.

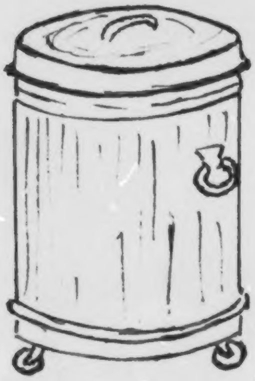


2. Organize foods and supplies in storeroom.
   a. Arrange the items according to food categories with each group in alphabetical order. For example: Canned Fruits—apples, applesauce, apricots, etc.
   b. These will be easier to check if they are in the same order as the Inventory Book.
3. Place oldest stocks out front where it can be used first—known as "first in, first out".
4. All foods should be stored away from the wall and off the floor.
   a. Provides for air circulation.
   b. Prevents contamination from moisture.

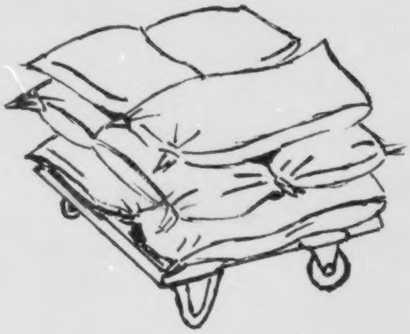


5. Unopened cases should:
   a. Have the case price and date of receipt marked on them.
   b. Be stacked with labels showing content, price, and date visible.
6. Place heavier items on dunnage (floor racks) or on the lowest shelf. Bagged foods or case goods should be stacked lock-style to provide for air circulation and to prevent contamination from moisture. (See following examples.)
7. Dried beans and certain other staple items may be stored in plastic or metal food containers with tight-fitting covers.
   a. Lines may be drawn or painted on cans, preferably on the inside, showing 25, 50, 75, and 100 pound measures of products stored therein. Marked levels make it easier to estimate quantities.

b. Storage containers should be plainly labeled and set on dollies with rollers for ease of movement.



Storage container



Bagged foods stacked on dunnage or skid.

8. Mobile equipment facilitates moving supplies to and from storage areas.
9. All aisles should be a minimum of 42 inches, preferably 48 inches, wide for easy movement of mobile shelves, tray racks, carts, and dollies.
10. USDA Donated Foods should be separated from purchased foods and arranged alphabetically so they can be inventoried separately.
11. Keep storage area free of clutter.
12. Improper food storage may result in food loss through spoilage. This will naturally result in higher food costs.

C. Temperature requirements for storing foods according to USDA Program Aid No. 403.

As used in the following table, "Satisfactory" means the type of storage is acceptable. "Preferred" means the type of storage maintains quality of the product for a longer period of time. "Required" means that this type of storage is essential; there is no alternative.

GENERAL TEMPERATURE GUIDES FOR STORING FOODS

Food	Dry storage (50°F.–70°F.)	Refrigerated storage (36°F.–40°F.)[1]	Freezer storage (0°F. or below)
DAIRY PRODUCTS			
Butter		Satisfactory up to 2 weeks (maximum 45°F.)	Required over 2 weeks
Cheese, Natural		Required (maximum 45°F.)	
Cheese, Processed		Required (maximum 45°F.)	
Milk, Canned	Satisfactory	Preferred	
Milk, Fluid Whole		Required (maximum 45°F.)	
Milk, Nonfat Dry	Satisfactory	Preferred	
EGGS			
Shell		Required	
Dried		Required	
Frozen			Required
MEAT AND MEAT PRODUCTS			
Frozen Meats, such as Ground Beef; Hams, and Shoulders; Pork Loins; Turkeys, etc.			Required
Cured Hams and Shoulders; Bacon; etc.		Required	
Canned Hams		Required	
Other canned meats, such as Beef and Gravy; Pork Luncheon Meat; Pork and Gravy, etc.	Satisfactory	Required	
FATS AND OILS			
Cottonseed Oil; Lard; Olive Oil; and Vegetable Shortening.	Satisfactory	Preferred	
CANNED VEGETABLES			
Green Beans; Beets; Carrots; Corn; Green Peas; Tomatoes; Tomato Juice; Tomato Paste; Tomato Puree; etc.	Satisfactory	Preferred	
CANNED FRUITS			
Orange Juice, Concentrated.		Required	
Other canned fruits, such as Apples; Applesauce; Apricots; Blackberries; Cherries; Cranberry Sauce; Figs; Grapefruit Sections; Grapefruit Juice; Peaches; Purple Plums (prunes); etc.	Satisfactory	Preferred	

---

[1] Although 36°F. to 45°F. is acceptable, 36°F. to 40°F. is presently considered the ideal temperature range.

GENERAL TEMPERATURE GUIDES FOR STORING FOODS—Continued

Food	Dry Storage (50°F.–70°F.)	Refrigerated storage (36°F.–40°F.)[1]	Freezer storage (0°F. or below)[1]
FRESH VEGETABLES			
Onions	Satisfactory	Preferred	
Potatoes, Irish	Satisfactory	Preferred (minimum 40°F.)	
Sweetpotatoes	Required (minimum 55°F.)		
Other fresh vegetables, such as Green Beans; Beets; Cabbage; Carrots; Spinach; etc.		Required	
FRESH FRUITS			
Apples; Peaches; Pears; Purple Plums, etc.		Required	
DRIED VEGETABLES			
Beans, High Moisture	Satisfactory for 60 days	Required over 60 days.	
Beans, Low Moisture	Satisfactory	Preferred	
DRIED FRUITS			
Apples; Apricots; Peaches.	Satisfactory for 2 weeks.	Required over 2 weeks	
Figs; Prunes; Raisins; etc.	Satisfactory	Preferred	
CEREAL PRODUCTS			
Regular Cornmeal; Whole Wheat Flour.	Satisfactory for 60 days.	Required over 60 days	
Degermed Cornmeal; All-purpose and Bread Flour; Rice; etc.	Satisfactory	Preferred	
MISCELLANEOUS			
Honey	Satisfactory		
Nuts		Required	
Peanut Butter	Satisfactory	Preferred	

---

[1] Although 36°F. to 45°F. is acceptable, 36°F. to 40°F. is presently considered the ideal temperature range.

D. Foods that absorb odors must be stored away from foods that give off odors. The following chart may prove helpful in properly separating foods for storage.

FOOD	GIVES OFF ODORS	ABSORBS ODORS
Apples, fresh	Yes	Yes
Butter	No	Yes
Cabbage	Yes	No
Cheese	Yes	Yes
Cornmeal	No	Yes
Eggs, Dried	No	Yes
Eggs, fresh shell	No	Yes
Flour	No	Yes
Milk, non-fat dry	No	Yes
Onions	Yes	No
Potatoes	Yes	No
Rice	No	Yes

E. Storage problems to be avoided.

1. DO NOT store detergents, insecticides, germicides or other cleaning products with any food products.* All cleaning products should have a separate storage area.
2. DO NOT store wet mops, brooms, or hang wet dish towels to dry in a food storage room.* Provide storage for these items in a room separate from food storage.
3. DO NOT keep personal belongings such as coats, sweaters, purses or overshoes in food storage room.*
4. DO NOT allow smoking in storeroom.*

*NOTE: These items are either unsightly, unsanitary or capable of collecting and giving off unpleasant odors which could contaminate the food being stored.

II. DRY FOOD STORAGE AREA

A. Provides orderly storage for food not requiring refrigeration.

B. Protects food from:

1. The elements.
2. Fire.
3. Insects.
4. Rodents.
5. Organisms.
6. Other causes of spoilage.
7. Theft.

C. Location of storeroom

1. The dry storage area should ideally be adjacent to the food preparation area and convenient to the receiving area.
2. Storeroom, preparation area, and receiving area should be on the same floor level to minimize handling and maintain security.

D. Storage space.

1. Space requirements for dry storage depend upon menus, number of meals, quantities of food purchased, and frequency of deliveries.
2. Allow at least one-half square foot of floor space per meal served daily.

E. Good lighting and ventilation.

1. Aids employees in housekeeping chores.
2. Helps control the growth of various types of bacteria and molds.

F. Temperature control.

1. Temperatures of 50° F. to 70° F. are recommended for the dry food storage area.
2. The storeroom should be free of uninsulated steam and hot water pipes, water heaters, refrigeration condensing units, or other heat-producing devices.
3. Thermometer:
    a. Is essential to assure that proper temperatures are maintained to prevent spoilage and deterioration.
    b. Readings should be taken at least once a day, and more frequently if there is difficulty in maintaining the desired temperatures.
4. Corrective measures should be taken to lower or raise temperatures when necessary.

G. Suggestions for dry storage.

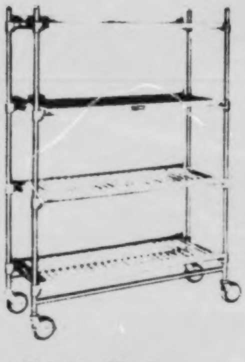
1. Store foods near the point of use.
2. Arrange storage areas so that there is the shortest distance between storage and point of use.
3. Store canned foods in a dry place at moderately cool but not freezing temperatures.
4. Rotate foods—first in, first out.
5. Throw away bulging or leaky cans.

6. Avoid buying dented cans, particularly those with dents on side seam or the rim seam at the top or bottom of the can.
7. Check rusty cans for leakage. The rust may have penetrated the can.
8. Freeze fresh bread if it is being kept longer than 24 hours.
9. Use foods within reasonable time limits; foods do not keep indefinitely in dry storage.
10. Inspect food supplies carefully from time to time for signs of infestation or mold.
    a. Remove any spoiled food promptly.
    b. Clean area thoroughly to prevent contamination of other foods.
    c. Storage areas must be kept as clean as any other area in the kitchen.
11. Control pests, rodents, insects, etc. through a regular pest control program.
12. Metal or plastic containers with tight-fitting covers should be used for storing broken lots of such items as flour, cornmeal, sugar, dried beans, rice, and similar foods. The number of cans will depend on the foods to be stored, delivery practices, etc.
13. Buy quantities that can be used in a reasonable length of time to avoid the necessity and expense of long storage.

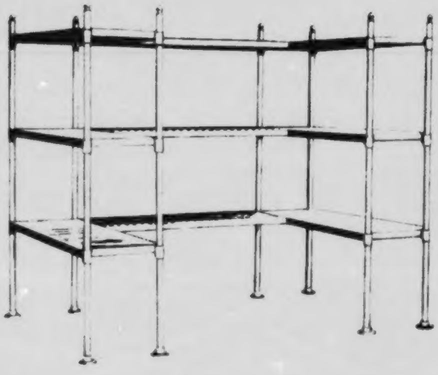
III. REFRIGERATED STORAGE

A. Arrangement: Refrigerated storage space should be convenient to the receiving area and adjacent to the food preparation center in the kitchen. For efficient operation, refrigeration equipment should be level and away from sources of heat such as sunny windows, radiators, hot pipes, and ranges.

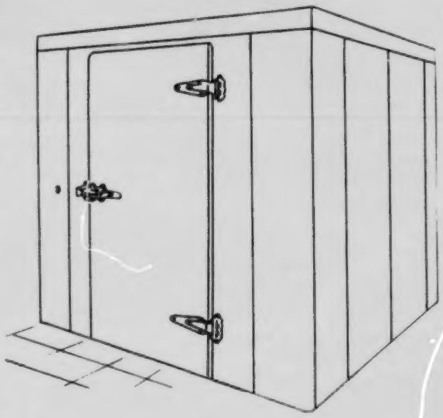
1. Reach-in refrigerators, freezers, or other refrigeration equipment with built-in motors and compressors:
    a. Operate best when placed away from walls so that air can circulate freely around and above them.
    b. Should not be fitted into a tight niche with walls on three sides or under a shelf. Such a location increases operating costs by cutting off air circulation needed to carry away generated heat.
2. Walk-in refrigerators and freezers are advantageous for kitchens preparing more than 200 meals per day.
    a. The floors of walk-in refrigerators and freezers should be flush with the outside floor to permit easy access for mobile equipment, such as shelves, tray racks, dollies, and carts.
    b. Storage shelves for use in walk-in refrigerators and freezers should be wire or slatted metal. They may be the stationary or mobile type. Portable shelving with casters is preferable because it is easier to move for cleaning.



Mobile Shelves



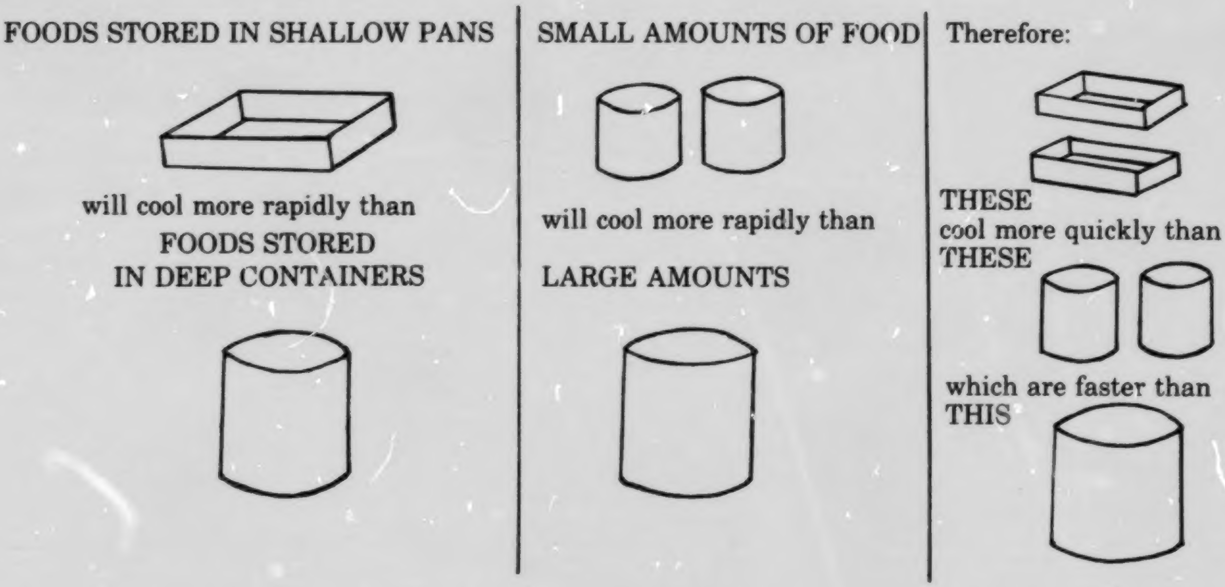
Stationary Shelves



B. Suggestions for refrigerated storage.

1. Keep temperature between 36°F. and 40°F.
2. Keep a thermometer in the refrigerator and check it daily.
3. Allow for circulation of air and provide for rapid cooling.
    a. Use only slatted or wire shelving.
    b. Allow space between items.
    c. Do not store food in paper boxes (paper is a good insulation material and will not allow quick cooling).
    d. Never line refrigerator shelves with paper or other material.
    e. Store foods such as ground meat or dressing in shallow pans so that food is not over two inches deep. (Refer to item No. 15 below.)
4. Plan food removal so that the refrigerator is opened as few times as possible.
5. Inspect refrigerator often; discard items that appear spoiled or unusable.
6. Keep shelves clean.
7. Put all food in proper containers before placing on shelves.
8. Cover all foods before storing; label and date.
9. Fresh meats such as ground meat, liver, poultry, and fish must be refrigerated immediately.
    a. Highly perishable foods lose quality fast, even when refrigerated. Therefore, they need to be used on the day they are delivered or within 24 hours.
    b. Remove outside paper wrappings from fresh meats and cover loosely before they are placed in the refrigerator. The meats should be spaced to allow for air circulation.
10. Milk and eggs must also be refrigerated immediately. Prompt and continual refrigeration is as important for these products as for meats.
11. Wrap cheese tightly to prevent its drying out.
12. Butter should be kept frozen and moved to refrigerator as needed.
13. Most fresh fruits and vegetables require immediate refrigeration to help preserve their color, flavor, texture, and nutritive value.
14. Cooked foods must be refrigerated at 45°F. or lower, in clean, covered containers.
    a. Use cooked foods within 24 hours; if to be kept longer than 24 hours, freeze immediately.
    b. Do not refrigerate cooked foods a second time after they have been removed from refrigeration and reheated for serving.
    c. Prepared and precooked foods that are served cold, such as cream or custard-filled pastries, cream or custard-filled puddings, salads, sandwiches, and cold meats, require refrigeration until serving time.
15. Cooked foods require quick cooling. This is especially important for liquid or semi-solid food preparations, such as custards and custard-filled products, cream sauce or gravies, stews and soups, which favor rapid growth and spread of bacteria; and for foods where handling during preparation is likely to induce general bacterial contamination, for example: cooked sliced ham and boned poultry.
16. Place foods in refrigerator as soon as possible.
    a. Do not let food set out at room temperature.
    b. Use refrigerated foods on a first-in, first-out basis.
17. Large quantities of slow-cooling foods, such as gravies, stews, and noodles, may take too long to cool unless special steps are taken to hasten heat transfer. Large quantities of hot food will raise the temperature of the refrigerator.
    a. Such containers of food can be placed in a sink or vat of cold water and stirred frequently to hasten cooling.
    b. Even if foods are placed directly in the refrigerator, occasional stirring may be necessary to assure cooling to near refrigeration temperature within two hours.

c. Large quantities of food should be stored in shallow pans not more than two inches deep to hasten cooling.


FOODS STORED IN SHALLOW PANS
will cool more rapidly than
FOODS STORED
IN DEEP CONTAINERS
SMALL AMOUNTS OF FOOD
will cool more rapidly than
LARGE AMOUNTS
Therefore:
THESE
cool more quickly than
THESE
which are faster than
THIS

IV. FROZEN FOOD STORAGE

A. Inspect all foods upon arrival before they are placed in storage.

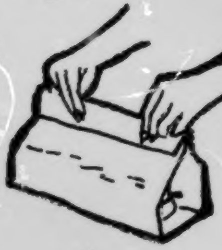
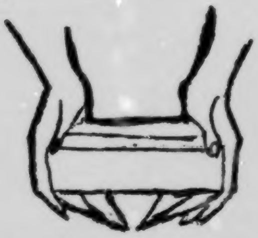
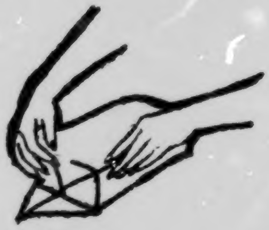
1. Check for possible shortages and damage before foods are accepted.
2. Be sure temperatures of both refrigerated and frozen products are adequate and that the products are in good condition. This is especially essential for frozen foods.

B. Control costs, quality, and nutritive value of frozen foods.

1. The freezer temperature should always be kept between 0°F. and −10°F. Foods held at 0°F. or below will be superior in color, flavor, texture and sometimes in nutritive value than those held at warmer temperatures (10° F. to 20° F.).
2. If small quantities of leftovers are to be frozen, chill promptly and thoroughly. (See packaging guidelines.)
3. Store frozen foods in their original containers.
   a. Always read directions on the container for specific storage instructions.
   b. Leaving foods in original containers keeps them from:
      (1) Drying out.
      (2) Becoming rancid.
      (3) Developing "off" flavors.
4. Place a thermometer in the freezer so that the inside temperature can be monitored daily.
   a. If temperature fluctuates, adjust the thermostat to maintain a constant recommended temperature.
   b. Outside indicators on new commercial installations are required.
5. Use space wisely but do not overload the equipment.
6. Place foods in freezer on wire shelving or dunnage (wooden flats) allowing for free air circulation to prevent "freezer burn" or development of mold.
7. Use frozen foods on a first in, first out basis.
8. Do not refreeze foods that have thawed.

C. Packaging guidelines.

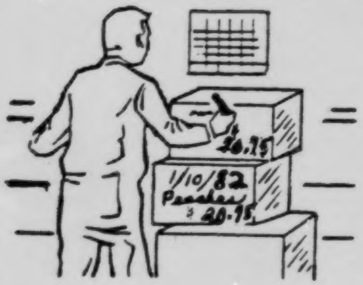
1. All foods that are to be frozen must be properly wrapped in moisture-vapor proof materials to assure highest quality.
    a. Label and date packages.
    b. Exclude air to prevent drying out.
2. In rigid containers, leave one inch of head space. This allows the food to expand during freezing.
    a. Use a knife to remove as many air bubbles as possible.
    b. Rigid containers are best used for main dishes (which contain a great deal of liquid) such as stews, spaghetti, chili, and soups.
    c. If food is over 45° F. place in shallow containers for rapid freezing.
3. Pies, cakes, rolls, and bread may be wrapped in foil, freezer paper, or plastic.
    a. It is recommended that drugstore method of wrapping as illustrated be used.
    b. Keep the wrapping snug against the food to keep out air bubbles.
    c. Place food in center of wrap and bring edges together over the food.
    d. Fold over in one-inch folds and continue folding until material is tight against food.
    e. Smooth ends to food; fold into triangles.
    f. Turn folded ends under toward each other, keeping wrap tight, and seal with freezer tape.

V. STORAGE MANAGEMENT

A. Cautious management of storage facilities will save money as well as time in the food service operation. The following general suggestions will prove beneficial:

1. Check food items when delivered. Don't pay for damaged foods or foods not received.
2. Foods subject to insect infestation need to be thoroughly inspected. Even though foods are free of infestation when shipped, they may arrive badly infested from an infested freight car or truck.
3. Any foods found to be in poor condition at the time of receipt must be segregated from other foods. (USDA Donated Foods found to be unacceptable are to be recorded and reported to the state distributing agency immediately.)
4. Use a marking pencil at receiving time to show date of delivery. This will help to use older stock first.



5. Have a systematic method of recording food in stock and the quantities of food moving into and out of storage.

6. Monthly inventories are necessary for determining:
    a. Food costs.
    b. Menu planning.
    c. Purchase orders for food and supplies.
7. A monthly inventory including all food and supplies on hand in the kitchen, as well as in storage, is a management requirement.
    a. The School Lunch Section provides an Oklahoma Inventory Book for the school's convenience.
    b. Use the original purchase cost to calculate the value of items in inventory.

B. Large schools may keep a perpetual inventory and daily withdrawal forms. Examples of these are shown in the Food Storage Guide for Schools and Institutions, PA–403. Also refer to Inventory Control, Section IV, Part 3.

VI. STORAGE HOUSEKEEPING PRACTICES

A. Sanitation and cleanliness are a must in food handling and storage.
1. Good housekeeping practices should be followed daily to ensure cleanliness and orderliness in all food storage areas.
2. Food service personnel in schools and institutions are directly responsible for adopting food practices of sanitation and cleanliness.
3. Most food poisoning outbreaks are caused by failure of food handlers to follow good sanitary practices.

B. Care of dry storage facilities.
1. Foods must be inspected regularly and cleaning schedules established and followed.
2. Check all food frequently for evidence of spoilage, such as bulging and leaking cans. Where spoilage has occurred, remove the food immediately.
3. Inspect for such damage as torn sacks and broken cartons.
    a. If the food is in good condition, use it immediately or repackage it and use as soon as possible.
    b. All empty containers and sacks should be removed from the storeroom.
4. Maintain constant vigilance for any sign of insect or rodent infestation, particularly during warm weather. Take immediate measures to control such infestation.

C. Care of refrigerated and frozen food storage facilities.
1. All refrigeration equipment needs to be checked frequently to determine that it is in good condition. It is important to retain a reliable serviceman for periodic service and cleaning of all compressors, condensers, and motors.
2. Cleaning schedules should be posted and followed for the checking and cleaning of all refrigerated equipment. Keep ventilation system of refrigeration units clean and free of lint and dust. (Refer to Sanitation and Safety, Section VII, and School Food Service Facility Planning and Equipping, Section IX, of this handbook.)
3. Freezers should be defrosted and cleaned as needed. Follow the manufacturer's instructions.
    a. Ordinarily, defrosting once or twice a year is enough or when the frost becomes three-eights to one-half inch thick on the sides of the coils.
    b. High humidity or opening the freezer often may necessitate more frequent defrosting.
    c. Defrost, if possible, when the quanitity of food in the freezer is relatively low.
    d. Food packages need not be removed from freezer to defrost if freezer is not too full. They can be moved from one part of the freezer to another as work progresses.
    e. Frost may be removed from the freezer with special tools such as a broad stiff spatula or thin-edged wooden paddle.
4. If a complete job of cleaning the freezer is needed, the following procedure is recommended:

    a. Disconnect the freezer and remove all food packages.
    b. Place the packages on trays or in baskets that have been thoroughly cooled in the freezer. Pile the packages as compactly as possible to reduce the amount of exposed surface and cover with insulating material such as newspapers.
    c. Scrape as much frost as possible from the surfaces in the refrigerator so there will be less to melt off.
        (1) Cold water may be applied to surfaces to hasten the melting.
        (2) Hot water should never be used, since pressure could build up in the evaporator and cause difficulty in starting the compressor.
        (3) An electric fan placed outside the door away from water, so that it will blow room air into the freezer, or cold air out, will help to melt the ice.
    d. Remove the ice as it loosens from the surface to speed the defrosting process. *Do not chip the ice off with an ice pick or other sharp tool that might damage the liner surface or coils.*
    e. Wash the interior and exterior when defrosting is complete.

5. Connect the freezer and let it run for approximately half an hour to bring the temperature down before reloading. When returning the food to the freezer, it is wise to take an inventory and to place the older packages to the front or top of the freezer and mark them for first use.

VII. CARE OF FOOD AND STORAGE FACILITIES DURING THE SUMMER MONTHS

A. Make every effort to use all foods on hand before the end of the school year.
    1. Put inventories to work by planning menus around the food on hand.
    2. The money saved by using food on hand can be used to restock the storeroom in the fall.

B. Dry food storage.
    1. Keep storeroom cool, dry, and well ventilated. Make some provision for airing the storeroom several times during the summer months.
    2. Clean storeroom thoroughly. Remove empty boxes, crates, and papers which could be fire hazards as well as hiding places for vermin.

C. Refrigerated food storage.
    1. All refrigerators and freezers should be serviced by a competent refrigeration repair service.
    2. Clean all refrigerated equipment thoroughly before food is placed in storage for the summer.
    3. Check refrigerated units periodically to be sure that proper temperatures are being maintained.

D. Food to be stored during the summer months.
    1. Check to be sure food is in good condition.
    2. Dispose of any canned food that is bulged or leaking.
    3. Open samples of food packaged in paper cartons and boxes to be sure food is in good condition. Repackage, making sure package is properly sealed, and marked for immediate use in the fall.
    4. Dispose of any food that is moldy or infested.
    5. Flour, cornmeal, and other grain products should be stored under refrigeration. (Be sure to leave space for air to circulate around it.)
    6. Use this food *first* in the fall.

NOTE: For additional information on storage, see:

1. Food Storage Guide For Schools and Institutions, USDA PA–403.
2. A Guide For Planning and Equipping School Lunchrooms, USDA, PA–292.
3. Oklahoma School Lunch Sanitation and Safety Guide.

SECTION VII
SANITATION AND SAFETY

Page

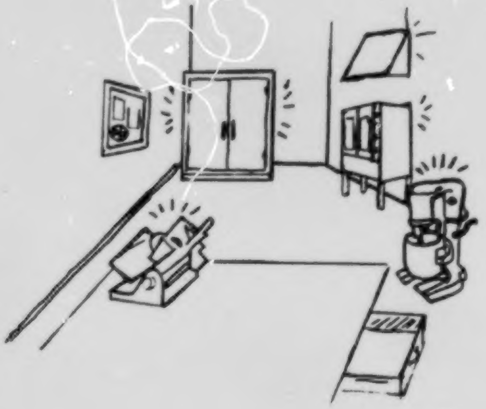
I. School Food Service Personnel Responsibility for Safety and Sanitation ... 223
II. Sanitation ... 223
III. Rules for Sanitary Food Service ... 223
IV. General Rules of Sanitation for Purchase of Foods ... 223
V. General Rules for the School Kitchen ... 224
VI. Food Handlers Recommendations ... 224
VII. Only Healthy, Clean People Should Handle Food ... 225
VIII. Storage, Preparation, and Service ... 225
IX. Facilities ... 227
X. Sanitary Dishwashing Procedures Are Necessary ... 228
XI. Clean Equipment Is Essential ... 228
  Guidelines for Temperatures Used in Food Nutrition Programs ... 229
  Operations in Dishwashing ... 230
XII. Large Pieces of Equipment Need Special Care to Ensure High Standards of Sanitation ... 231
XIII. Care and Disposal of Garbage and Trash ... 232
XIV. Pest Control ... 232
XV. Management ... 233
  A Food Service Worker ... 234
XVI. Food Poisoning ... 235
XVII. Types of Organisms and/or Chemicals which Cause Food Intoxication and Infection ... 235
XVIII. Methods of Transmission of Respiratory and Intestinal Diseases ... 237
XIX. Summary ... 237
  Questions and Answer Chart for Sanitation Facts ... 238
XX. Preventing Food-Borne Illness Outbreaks ... 238
  Oklahoma State Department of Health Inspection Report—Food Establishments ... 239
XXI. Procedures to Follow if a Child Becomes Ill After Consuming a School Meal ... 241
XXII. Safety in the School Food Service Facility ... 242
XXIII. First Aid ... 243
  Bibliography ... 245

SANITATION AND SAFETY

I. SCHOOL FOOD SERVICE PERSONNEL RESPONSIBILITY FOR SAFETY AND SANITATION

A All food must be wholesome and free from harmful agents, which cause foodborne illness.
B. All school food service employees must be made aware of the need for safety.

II. SANITATION



A. Cleanliness

1. Means the absence of soil.
2. Is accomplished by three factors:
    - a. Water.
    - b. Friction.
    - c. A wetting agent (soap or detergent).

B. Sanitary

1. Means the absence of:
    - a. Harmful bacteria.
    - b. Molds.
    - c. Fungi or yeast.
2. Accomplished by:
    - a. Immersion in a solution at least 100 parts per million of chlorine and water.
    - b. Immersion in a comparable commercial solution.
    - c. Immersion in clean hot water at least 180° F. for two minutes or more.

C. Factors to consider in the sanitary aspects of the food service program are:

1. Employees.
2. Food.
3. Dishes, utensils, and equipment.
4. Kitchen, storage, and dining area.

D. Protecting the health of the customer—the school children.

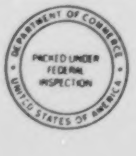
1. Food poisoning outbreaks are usually caused by failure to follow sanitary practices.
2. Employees are responsible for:
    - a. Good health.
    - b. Personal hygiene.
    - c. Sanitary work habits.

III. RULES FOR SANITARY FOOD SERVICE

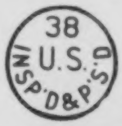
A. Every food service worker should know the federal, state, and local sanitation regulations.
B. The standards established by regulations must be observed to ensure protection of food service programs.

IV. GENERAL RULES OF SANITATION FOR PURCHASE OF FOODS

A. Purchase pasteurized fresh milk and milk products and keep refrigerated until served.
B. Purchase only inspected meats. Inspected meat has an inspection stamp as shown in the following example.



C. Purchase seafood from sources approved by the U.S. Public Health Service. See example seal below.



D. Home processed foods are not allowed in school food service programs. Lack of quality control and sanitary standards in home canning may allow potential hazards.

E. Never use bulged or defective cans or canned foods having an off odor or mold.

F. Avoid purchase of foods that have been exposed such as:

1. Broken packages.
2. Unwrapped bread or pastry not kept in covered containers.
3. Foods with labels torn off or any damaged cover or wrapping.

G. Purchase frozen foods that have been kept frozen.

1. Frozen foods should not be thawed and refrozen.
2. Check for ice crystals, discoloration, freezer burn, and dehydration.

V. GENERAL RULES FOR THE SCHOOL KITCHEN

A. The kitchen is to be used only by authorized personnel.

1. Beverages prepared for school personnel should be provided in front of the serving counter or in the dining room.
2. Sales persons should always be met in the school food service office or dining room.
3. Staff meetings should not be held in the kitchen.

B. The kitchen exit should be restricted to kitchen use only:

1. Re-route school traffic.
2. Transport non-kitchen supplies to other exits.

C. Persons other than those engaged in preparing and/or serving the meal should **NOT** be in the kitchen during the serving period.

1. Other adults should go through the serving line to get their trays rather than go into the kitchen and serve themselves.
2. This policy is in keeping with regulations of the State, County, and City Health Department.

VI. FOOD HANDLER RECOMMENDATIONS

A. Physical examination: All persons associated with the preparation of food and drink or washing of utensils in a school food service program should have a complete physical examination at the beginning of each school year.

B. Rules and regulations of the State Department of Public Health in regard to sanitation of eating and drinking establishments state:

1. Persons infected with any disease in a communicable form or carriers of such disease shall not work in any eating or drinking establishment.
2. Such establishments shall not employ any such person or any person suspected of being infected with any disease in a communicable form or of being a carrier of such disease.
3. Employees should stay away from work if they have colds, sore throats, open sores, boils, infected cuts or any short term communicable disease.

C. According to the Oklahoma School Lunch Program Agreement, the School Food Authority agrees to maintain proper sanitation and health standards in the storage, preparation, and service of food.

VII. ONLY HEALTHY, CLEAN PEOPLE SHOULD HANDLE FOOD

A. Work habits are important:

1. Keep the kitchen free of clutter.
2. Keep the work tables clear and clean at all times.
3. Wash and put away equipment when no longer needed.
4. Use paper towels for drying hands.
5. Use spatulas to scrape food from bowls or pans.
6. Use a clean spoon to taste food; never the mixing or stirring spoon.
7. Wash any utensil which has dropped on the floor.
8. Handle plates or serving trays so that fingers do not touch the eating surface.
9. Handle flatware by handles; or preferably, use dispensers.
10. Use tongs, spoons, forks, or disposable plastic gloves for serving.
11. Handle foods as little as possible.
12. If mixing is done with hands, use plastic gloves.
13. Use disposable tissue rather than cloth handkerchief.
14. Keep fingers away from mouth, hair, and face.
15. Do not eat while preparing or serving food.
16. Do not chew gum while working.
17. Keep purses, shoes, and clothing in employee lounge.
18. Keep restrooms and lounge clean at all times.
19. Do not smoke or use tobacco in the kitchen.

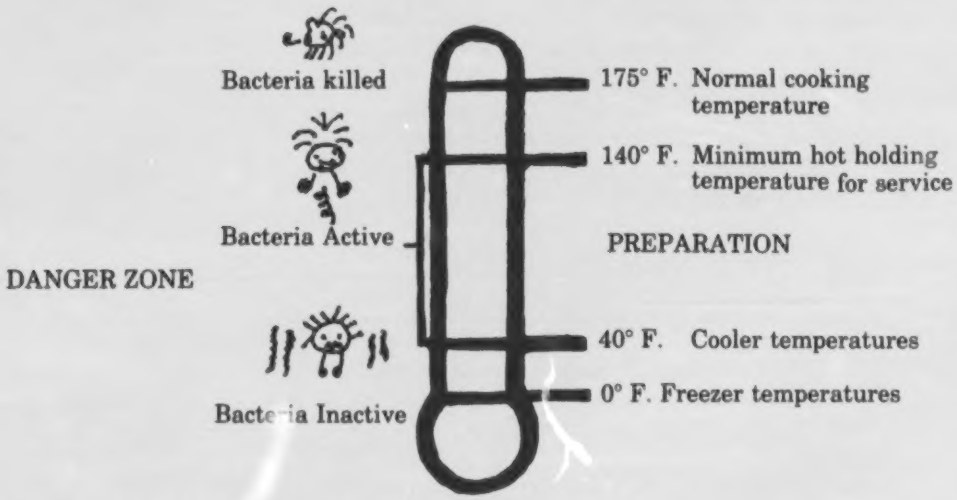
B. Disease can be spread by:

1. Food.
2. Fingers.
3. Flies.

VIII. STORAGE, PREPARATION, AND SERVICE

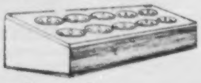
A. Safe food can be prepared and served only when sanitary practices are used. Some precautions to follow are:

1. Keep hot foods hot (temperature above 140° F.) and cold foods cold (below 40° F.).


Bacteria killed
Bacteria Active
DANGER ZONE
Bacteria Inactive
175° F. Normal cooking temperature
140° F. Minimum hot holding temperature for service
PREPARATION
40° F. Cooler temperatures
0° F. Freezer temperatures

2. All precooked foods should be refrigerated at 40° F. or less.
   a. Foods to be served cold must be kept under refrigeration until serving time.
   b. Don't give bacteria time to poison foods.
3. All foods should be covered while in the refrigerator.

4. Hazardous foods should not be without refrigeration for long periods of time during preparation or serving. Given the right conditions bacterial growth can double within 20 minutes.
    a. Potentially hazardous food must always be kept below 40° F. or above 140° F. For the bacteria that cause food poisoning, "life begins at 40° F. and ends at 140° F."
    b. Hazardous foods include:
        (1) All custard and cream fillings.
        (2) Poultry.
        (3) Egg products.
        (4) Mayonnaise.
        (5) Shellfish.
        (6) Salads with meat, eggs, mayonnaise, or certain types of salad dressing.
        (7) Creamed dishes containing:
            (a) Meat.
            (b) Fish.
            (c) Eggs.
            (d) Milk products.
5. A thermometer should be permanently located at the warmest point in the refrigerator and be checked, especially when outside temperature is high.
6. Refrigerator temperature must be below 40° F. in the warmest part of the storage area.
7. Frozen products should be stored at or below 0° F.
8. Never refreeze products once they are thawed.
9. Frozen foods should be thawed:
    a. In the refrigerator at 40° F. or below.
    b. As part of the cooking process.
    c. Under cold continuously running water.
10. Do not fill trays in advance of lunch period. Serve children as they pass through the line.
11. Butter, peanut butter, honey, syrup, margarine, jams, jellies, and similar items should be served in individual portions and not in bulk unless from approved dispensers.
12. Paper napkins should be provided.
13. If straws are provided, they should be individually wrapped, or dispensed in a dispenser which prohibits the possibility of contamination.
14. A flatware dispenser should be used. Flatware placed in a flat pan or dispenser to be handled by students is an unsatisfactory practice.



15. Hands and equipment must be thoroughly washed after handling uncooked poultry, fish, and similar products.
16. When ice is used, it must be from sources approved by the health department. Only clean equipment and utensils should be used for storing and handling ice.
17. Raw fruits and vegetables should be thoroughly washed before using.
18. Only pasteurized milk and milk products may be used.
19. Milk should be refrigerated until served.
20. All milk must be served in the individual, original container or from approved dispenser. Individual cartons are recommended.
21. All meat, milk, and other dairy products must be from a source approved by state or local health authorities.
22. Leftover foods can be avoided by proper planning. Under no circumstances should they be used after 24 hours unless immediately frozen for later use.
23. Dispose of all moldy, spoiled, sour or otherwise contaminated foods.
24. Do not reuse paper or plastic milk cartons or metal cans for freezing, baking, refrigerating, or storing.
25. Store dry milk in air tight cartons after the original package has been opened.
26. Only those foods which are commercially processed and subject to inspection are recommended for school feeding purposes.

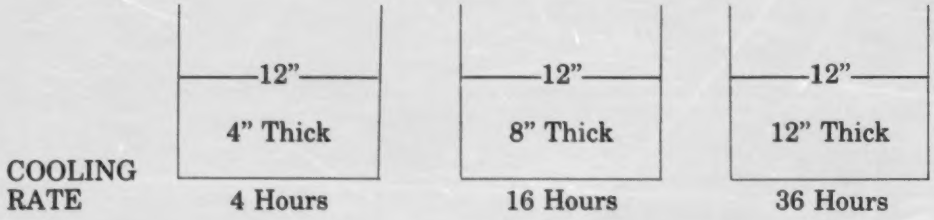
3. Do not cool food at room temperature.

   Large quantities of food should be stored in shallow pans not more than two inches deep. (See illustration in Storage of Food and Supplies, Section VI, of this handbook.)

C. Handling of leftovers.

1. If hot foods are left after service, do not allow them to cool to room temperature.
   a. Refrigerate or freeze leftovers immediately.
   b. Transfer the foods to shallow pans to promote faster cooling.
   c. Do not tightly cover the foods; allow steam to escape and increase the cooling rate.
   d. Let the food completely cool and then tightly cover.
2. If deep pans must be utilized, stir or agitate the food frequently. This prevents the food in the center from traveling through the danger zone slowly and promotes faster cooling.
3. The cooling rate is proportional to the half-thickness of the depth of food squared.

$$\text{Cooling Rate} = (1/2T)^2 \ (T = \text{thickness})$$



IX. FACILITIES

A. Only quality products properly prepared and handled in a clean, sanitary environment can be depended upon to produce safe food.

1. Equipment should be used for the purpose for which it was designed. *Proofing cabinets should not be used as holding cabinets for food.*
2. Floors should be free from dirt, litter, and moisture and should be properly cleaned daily.
3. Screens on windows, doors, and outer openings should be kept closed, clean, and in good repair.
4. The walls and ceilings, including windows, doors, light fixtures, and exposed pipes should be kept clean and properly insulated.
5. Exhaust fans, hoods, and filters should be properly operated, kept clean, and free of grease.
6. Restrooms, including fixtures, should be scrubbed daily. An adequate supply of paper towels and soap must be provided at all times.
7. All counters, shelves, tables, refrigeration units, sinks, and other equipment should be constructed for easy cleaning. Equipment should bear the National Sanitation Foundation (NSF) seal.
8. Work table tops should be clean and free from cracks.
9. Chopping surfaces should be of durable nonporous synthetic materials. Wooden chopping surfaces cannot be satisfactorily sanitized.
10. Equipment should be placed far enough from walls and floors to allow for cleaning.

B. Standards must be established and employees trained to keep equipment clean.

1. Failure to give proper care may cause:
   a. Equipment to malfunction.
   b. Quality of food to be affected.
2. Improperly cleaned equipment may cause high maintenance and repair costs.

X. SANITARY DISHWASHING PROCEDURES ARE NECESSARY.

A. Heat is an important element of any dishwashing procedure.

  1. Heat will destroy bacteria, especially moist heat.
  2. Heat and time work together to destroy bacteria. Washing and sanitizing require adequate hot water. (See Example No. 1.)

B. Eating and drinking utensils must be properly pre-rinsed, washed, rinsed, sanitized, and air dried.

  1. Procedures are:

    a. Dishwashing machines.

      (1) Wash at 140° F.— 160° F. for 15 seconds.
      (2) Rinse at not less than 180° F. for 12 seconds.

    b. Three compartment sink for handwashing.

      (1) Wash in good detergent at 110° F.— 120° F.
      (2) Rinse in clean hot water.
      (3) Sanitize by complete immersion in:

        (a) Water at 180° F. for two minutes or more.
        (b) Use sanitizing solution according to packaging instructions. Sanitizing solution evaporates into the air and does not have to be rinsed from dishes. (See Example No. 2.)

  2. Special note should be taken of the following:

    a. A thermometer and a clock are needed to check hot water sanitizing.
    b. Utensils should be stored on a clean, smooth surface. Cups and glasses should be inverted.
    c. Vegetable peeler, including the trap, should be cleaned after each use.
    d. All cutting, slicing, and chopping equipment should be washed in detergent and sanitized with chlorine or a commercial solution.
    e. All utensils and equipment must be properly cleaned and stored.
    f. All pieces of equipment that will fit should be run through the dishmachine.

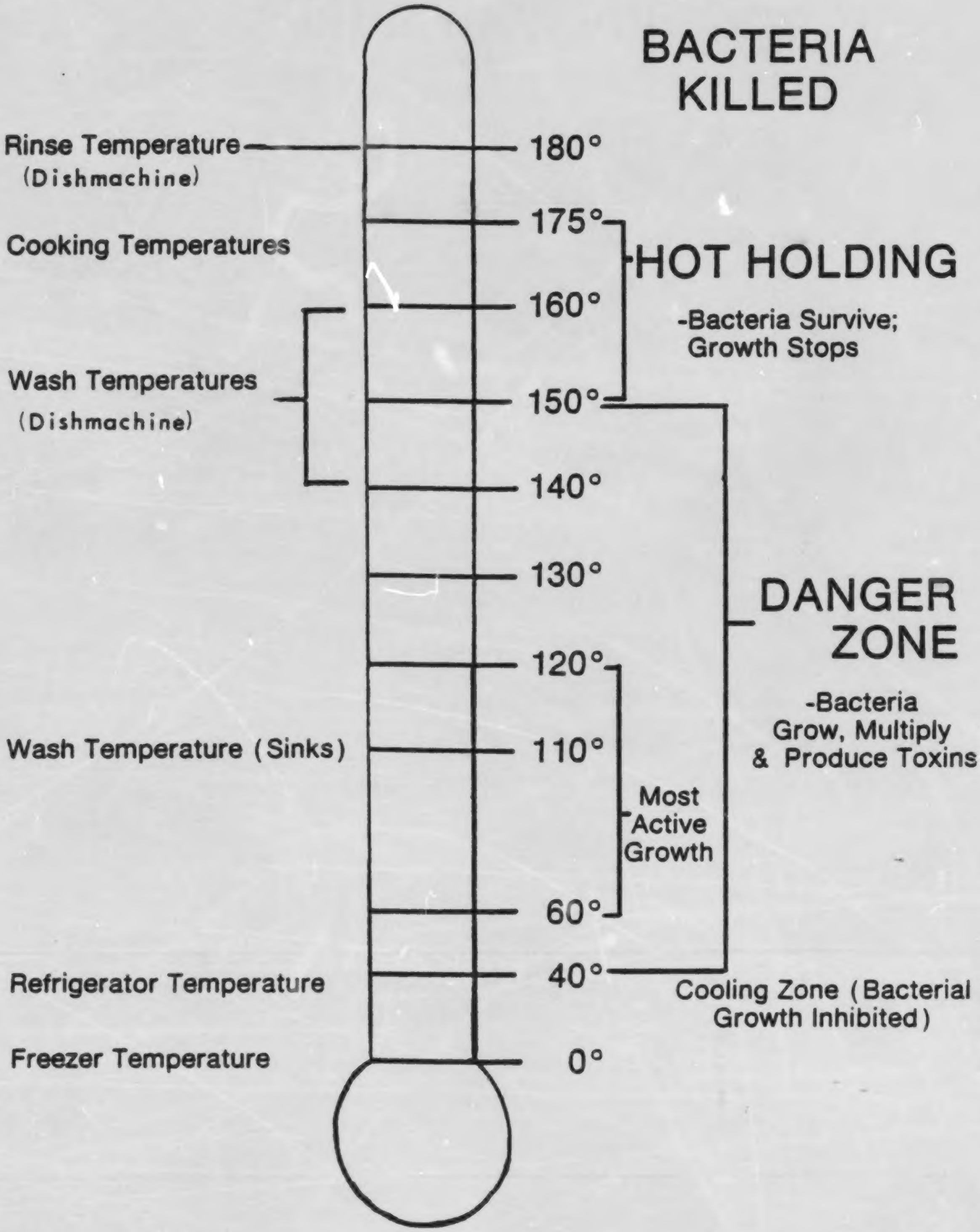
  3. If it is absolutely necessary that the same person handle both clean and dirty dishes, a sanitizing solution should be available for dipping the hands between operations.
  4. Use cold water to pre-rinse dishes and trays. Hot water cooks certain food particles and liquifies grease which is attracted to cold plumbing pipes.
  5. Grease traps should be cleaned on a regular basis.

XI. CLEAN EQUIPMENT IS ESSENTIAL

A. Odor and off-flavor problems are usually the result of poor cleaning. Removal of all soil deposited on kitchen equipment, both large and small, provides effective control for this problem.
B. Equipment such as meat slicers, which must be dismantled for proper cleaning, should be carefully checked since food may be deposited out of sight from casual inspection.
C. Old and pitted equipment can also present a problem of concealed food.
D. Walls and shelving in walk-in refrigerators, where foods are stored, cause unpleasant odors and/or flavors unless they are carefully cleaned.
E. When to clean large equipment will vary with the type of operation (See School Food Service Management and Personnel Organization, Section VIII, of this handbook for examples of cleaning schedules.)
F. Sanitation and safety factors are not all dependent on the worker. Some are built into the equipment.

  1. Study the operator's manual for the equipment.
  2. Check the installation and connections.

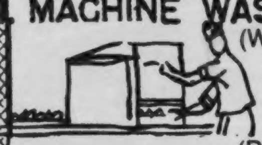
GUIDELINES FOR TEMPERATURES USED IN FOOD NUTRITION PROGRAMS (EXAMPLE NO. 1)


BACTERIA KILLED
Rinse Temperature (Dishmachine)
180°
175°
Cooking Temperatures
HOT HOLDING
-Bacteria Survive; Growth Stops
160°
Wash Temperatures (Dishmachine)
150°
140°
130°
DANGER ZONE
-Bacteria Grow, Multiply & Produce Toxins
120°
Wash Temperature (Sinks)
110°
Most Active Growth
60°
Refrigerator Temperature
40°
Cooling Zone (Bacterial Growth Inhibited)
Freezer Temperature
0°

OPERATIONS IN DISHWASHING

Machine Washing

1. SORTING
2. SCRAPING
3. PRE-RINSING
4. MACHINE WASHING

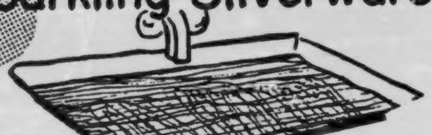


(Wash at 140° F.)

(Rinse at 180° F.)

5. STACKING
6. STORING

Sparkling Silverware

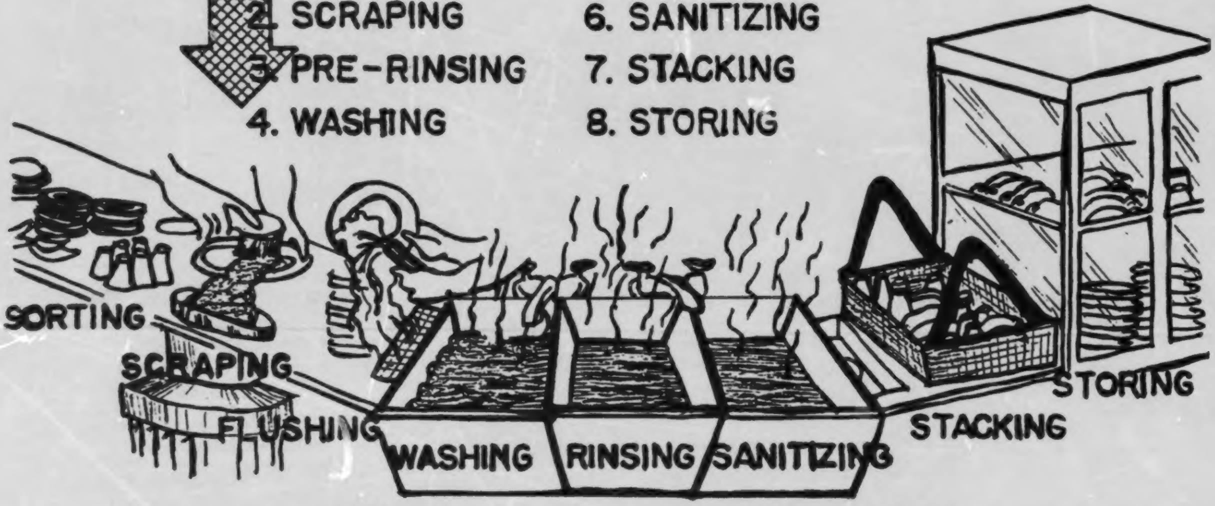


PRE-SOAKING before washing and sanitizing.

DRYING may be done with hot air.

Hand Washing

1. SORTING
2. SCRAPING
3. PRE-RINSING
4. WASHING
5. RINSING
6. SANITIZING
7. STACKING
8. STORING


SORTING
SCRAPING
FLUSHING
WASHING
RINSING
SANITIZING
STACKING
STORING

Wash with a good detergent in water at not less than 110° F.	Rinse in clean hot water 110° F.	Sanitize at not less than 180° F. or at least 50 PPM chlorine solution for 2 minutes in warm water.

G. Certain basic steps are necessary for effective cleaning.

1. Follow the instructions in the operator's manual.
2. Use the proper materials and tools for cleaning.

XII. LARGE PIECES OF EQUIPMENT NEED SPECIAL CARE TO ENSURE HIGH STANDARDS OF SANITATION

A. Refrigerators require constant care.

1. The Sanitation Code of Oklahoma requires that refrigerators have a thermometer.
2. Air temperature in all parts of the refrigerator must be 40° F. or below.
3. The inside of the refrigerator should be kept clean and dry.
4. Wipe up spills immediately.
5. Wash interior at least once a week with warm water to which a little baking soda or a commercial solution has been added.
6. Wash, rinse, and dry exterior as needed.
7. Do not overload refrigeration capacity.
8. Do not cover shelves, this prevents free air movement.
9. If mold develops, disconnect refrigerator, wash walls and shelves thoroughly, using a strong chlorine solution, an ammonia solution, or a recommended commercial solution. Dry and air out before reloading.

B. Freezers: Label and date wrapped packages when placing in freezer.

1. Use only for storage of frozen products.
2. Defrost and clean interior as needed.
3. Wash, rinse, and dry exterior as needed.
4. Do not store anything in such a manner as to block air to cooling coils.

C. Dishmachines should be cleaned after each use.

1. Scrub inside of machine.
    a. Using a hose, rinse with hot water.
    b. Scrub scrap trays and leave on dish table to air and dry.
    c. Scrub curtains and leave out to air and dry.
2. Leave dishmachine doors open or the curtains off to permit air to circulate in the machine.
3. At least once a week remove, wash, and rinse tubes and clean. In doing this, follow the manufacturer's instructions.
4. To prevent clogging, check opening in tubes daily.
5. Wash, rinse, and dry exterior as needed.

D. Cooling racks and storage racks need to be thoroughly cleaned weekly. Scrub with a stiff brush and hot detergent solution inside and out.

E. Storage bins for sugar, flour, etc, should be wiped daily with a clean, damp cloth; wash periodically with hot detergent solution inside and out.

F. Dish trucks should be washed daily; scrub with a stiff brush and hot detergent solution weekly.

G. Fans should be cleaned as often as necessary to keep clean and free from dirt.

H. Drinking fountains should be cleaned daily with hot detergent solution; use stainless steel cleaner weekly.

I. Can openers should be cleaned every day after use.

1. Remove shank from base and soak in hot detergent solution, rinse, and dry or run through dishmachine.
2. Clean base with damp cloth or brush.
3. At the end of school, clean as above. Remove base and screws, clean and dry. Reassemble, and attach to surface.
4. Store shank in clean dry place.

J. Pots and pans should be thoroughly cleaned after use.

1. Rinse in cold water, wash with hot detergent solution and stiff brush, rinse and air dry, or run through dishmachine. If left with a greasy feeling, pans are not clean.
2. Food poisoning can develop from unsanitary pans and cooking utensils.
3. Cracked, chipped, or dented utensils, trays, pots, pans, small equipment, and dishes should be thrown away.

K. Ball bearing rolling pins should never be put into water.

1. After each use, scrape dough from rolling pin with dough cutter.
2. Take a damp cloth, saturate with a sanitizing solution and wipe clean.
3. Do not keep rolling pin in flour bin.
4. Never oil.

L. Scales should be thoroughly cleaned with a brush and hot water and dried after each use.

1. Run bakers scale scoop through dishmachine.
2. Do not put food directly onto scale platform. Use wax paper or preweighed container.

M. Garbage cans should be cleaned with brush and hot detergent solution **daily.**

N. Garbage disposal should be rinsed with cold water at the end of each meal to clean all food remaining in receptacle.

O. Plastic trays and cups should be soaked and cleaned with solution recommended by manufacturer as needed and run through dishmachine. Never use chlorine solution to remove stains. Chlorine damages the surface of plastic items.

P. Cutting boards should be washed with sanitizing solution after each use.

1. Never cut cooked meat on a board used to prepare raw meat, poultry, fish, or vegetables without washing and disinfecting the used board.
2. Sanitize according to composition of board or run through the dishmachine after each use.
3. Store in dry area.

Q. Slicers should be disassembled and cleaned daily. Clean around and under to eliminate food scraps that will attract insects.

R. Other equipment such as counter, shelves, tables, hoods, and ranges should be kept clean and free from dust, dirt, insects, and other contaminating materials.

XIII. CARE AND DISPOSAL OF GARBAGE AND TRASH

A. All garbage and refuse are potential breeding places of disease-producing germs and disease-bearing insects and serve as a food supply for rodents.

1. Garbage and trash should be kept in tight, nonabsorbent, and easily washed containers.
2. Garbage cans should be provided with tight-fitting lids that are kept on when not in actual use; they should be placed in a screened or enclosed ventilated area.
3. Liners for garbage cans aid in cleaning and prolonging life of these containers.
4. Receptacles should be washed daily with hot water and detergent and rinsed with clean water.
5. A rodent and vermin free area large enough to hold all outdoor garbage cans should be provided.
6. Trash and paper waste should be disposed of by an approved method.

B. Insecticides can be used effectively in and near garbage and waste areas.

XIV. PEST CONTROL

A. The School Food Service Department should be free of all pests, particularly flies, roaches, ants, mice, and rats.

1. Prevent and eliminate rodents and insects because they spread disease.
2. Rodents and insects walk and feed on filth, picking up germs on their feet and bodies, then deposit the germs on any food and utensils they touch.

B. Good housekeeping is a must in controlling pests. NO AMOUNT OF INSECTICIDES AND NO EXTERMINATION PROGRAM CAN OVERCOME THE EFFECTS OF POOR DAILY HOUSEKEEPING.

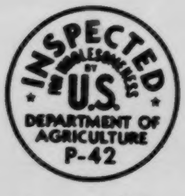
C. General methods of controlling pests:

1. A licensed commercial exterminating firm should be used on a regular basis.
2. Use poisons for insect and vermin control only under the direction and supervision of the health department.
3. Acceptable electronic fly control devices are available.
4. Keep all food covered.
5. Clean up spilled foods immediately.
6. Clean shelves and drawers frequently.
7. Keep walls, floors, and ceilings clean and well lighted. There should be no dark corners.
8. Keep all screens closed.
9. See that breaks in window and door screens, cracks in walls, ceilings and floors are repaired immediately.
10. See that all openings around wiring, drain pipe, vents, and flues are closed with metal or heavy screening.
11. Keep food in metal or other approved containers with tight-fitting lids.
12. Inspect and unpack produce on arrival. Cockroaches and other crawling insects may be brought into food service departments in crates or cartons of produce.
13. Pest strips and devices which automatically spray chemicals are unacceptable methods of control.
14. Food, soap, cleaning powders and dangerous substances used for pest control MUST NOT be stored together.
15. Clean up outdoor insect and rodent breeding places, such as rubbish, scrap lumber, tin cans, and garbage containers.
16. All outside cracks and crevices should be sealed.
17. Keep the inside and outside of the building clean.
18. Leave all chemicals in original containers.

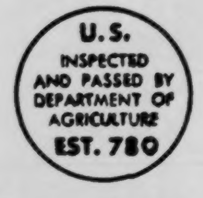
XV. MANAGEMENT

A. The School Food Service Supervisor should:

1. Work with those concerned in developing standards, policies, and practices regarding sanitation.
2. Work with administrators and teachers in making the sanitation aspects of school food service a positive learning experience for children.
3. Solicit aid from the health department personnel when help is needed.
4. Assist in securing training in basic principles of sanitation for all personnel.
5. Plan and conduct such training programs as necessary for the maintenance of established sanitation education.
6. Prepare or secure suitable materials for sanitation education.
7. Obtain the source, brand name, plant number, and establishment number, if available, on all foods received. (This information can be obtained from bills and food packages or containers and will be of importance in the investigation of any outbreak of food-borne illness.)



Found on poultry and egg products.



Found on meats, canned goods, packages, or containers.

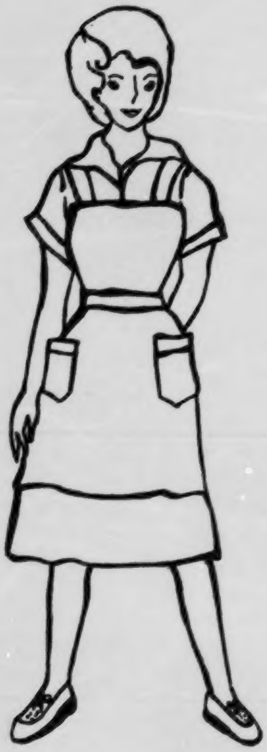
B. The manager is the key to a sanitary, clean, and safe facility. The manager must:

1. Be constantly alert to hazards.
2. Train food service personnel in sanitary and safe procedures.
3. Cooperate with others responsible for the program.
4. Know and observe personal health habits.

C. The Food Service employee should take responsibility for personal hygiene and sanitary work habits.

1. Handwashing should become a habit:
    a. Before starting work.
    b. After visiting the restroom.
    c. After touching face, mouth, or soiled surface.
    d. After handling money.
    e. After handling garbage, cleaning equipment, or outside objects.
    f. After handling potentially hazardous foods such as raw poultry, meat, and fish.
    g. After smoking.
2. Proper procedures for washing hands:
    a. Friction.
    b. Soap.
    c. Running warm water.
    d. Mechanically air dry or use paper towels from a dispenser and dispose of after use.
3. Personal appearance should be given constant attention. Workers should wear uniforms and hair nets. The following example emphasizes points to observe.

A Food Service Worker



Does Have—

Hair Neatly Combed
Hair Net
Daily Bath
No Body Odor
Clean Hands and Nails

Wears—

Clean Uniform with Sleeves
Clean Apron
Smooth Hose
Clean Shoes with Low Heels and Closed Toes

Does Not Smoke In The Kitchen

Does Not Chew Gum

Does Not Wear Excessive Makeup or Jewelry

Does Not Primp Hair

XVI. FOOD POISONING

A. Food contamination may occur in the processing plant, the wholesaling firm, or in the institutional kitchen, or in transportation.

1. Control of food-borne disease involves two main preventive measures in food handling.
    a. Prevent contamination from taking place.
    b. Establish conditions in which bacteria cannot grow.
2. All food should be handled as if it were contaminated.
3. Conditions must be set up that will either kill the bacteria that may be present or prevent them from multiplying at a rate that could result in food poisoning.

B. Each person handling food has the responsibility of preventing food poisoning.

XVII. TYPES OF ORGANISMS AND/OR CHEMICALS WHICH CAUSE FOOD INTOXICATION AND INFECTION

A. Food poisoning is a general term not exact in itself.

1. The term is used to describe any type of disease or illness caused by taking into the body spoiled, contaminated, or adulterated food or drink.
2. It is often referred to as "ptomaine poisoning."

B. Almost all reported cases of food-borne disease are caused by bacteria or by poisons produced by bacteria.

1. The poison is formed in food before it is eaten and cannot be detected by taste, odor, or color.
2. Food prepared far in advance + poor refrigeration + careless handling = SICKNESS.

C. Salmonellosis is an infectious food poisoning caused by salmonella, a genus of bacteria that grows well on artificial media such as cutting boards, utensils, etc.

1. It is frequently found in raw foods, especially poultry and eggs.
2. Salmonella victims show symptoms of poisoning within 6 to 24 hours after eating the food.
3. Salmonella bacteria can live and grow in the digestive tract, once contaminated food is eaten. When this happens, the following symptoms may occur in 12 to 36 hours:
    a. Severe headache, vomiting, diarrhea, abdominal cramps, and fever. Because of the similarity of symptoms, it may be mistaken for flu or other stomach disorders.
    b. The condition is rarely fatal except among infants or elderly persons whose resistance is low.
    c. The illness usually lasts from two to seven days.
4. The spreading of salmonella is caused by:
    a. Insects, rodents, and pets, especially turtles, birds, dogs, and cats.
    b. Humans get salmonellosis mainly through eating contaminated food or through contact with an animal or human carrier.
5. The bacteria that cause salmonellosis is practically everywhere. Yet, with a little more care by persons handling food, the number of "upset stomachs" among customers could be greatly reduced.

   a. Heat and cleanliness are the two strongest weapons against salmonellosis.
   b. Personal hygiene principles must be followed by all food handlers.

D. Staphylococci is the most common type of food poisoning.

1. Staphylococci are often called "opportunists" because they wait for suitable conditions to invade the body.
2. Humans carry the organisms on their hands, arms, and in the nose.
3. Staphylococci can cause boils and abscesses and often cause infection in wounds.
4. Staphylococci produce a heat resistant toxin which is capable of causing illness even though the bacteria have been killed by heat.
5. A frequent source of staphylococci in food is infected persons who have prepared or handled food.

   a. Organisms can be destroyed by proper heat treatment and the use of chemicals.
   b. Air-borne staphylococci in the environment of food preparation have been successfully controlled by use of special ultra-violet light lamps.
   c. The usual symptoms of staphylococci infection are vomiting, diarrhea, prostration, and abdominal cramps.
   d. Symptoms occur within 3 to 8 hours after eating food contaminated with staphylococci toxin.

E. Clostridium Perfringens is a bacteria that commonly inhabits the intestinal tract of humans and other warm blooded animals.

1. The organism produces spores which are resistant to heat, cold, and drying.
2. Food poisoning from this bacterium is associated with meat, poultry, and high protein foods that have been improperly cooked or stored. The spores are everywhere in sewage, soil, dust and food.
3. Risk increases when large amounts of food are held in containers or steam tables for long periods or overnight.
4. Symptoms of perfringens poisoning will begin in 8 to 24 hours. (usually 12)

   a. Symptoms of the disease include diarrhea and gas pains.
   b. Nausea and vomiting rarely occur.
   c. This disease is rarely fatal.

5. To prevent food poisoning from perfringens:

   a. Cook all high-protein foods until well done.
   b. Keep foods hot, at least above 140° F. until eaten.
   c. Refrigerate unserved food immediately in shallow containers to reduce temperatures quickly.

F. Botulism is the most deadly type of food poisoning.

1. Botulism is caused by a toxin produced by the spores "clostridium botulinum."
2. "Clostridium Botulinum" is found in the soil; the spores are very resistant to heat and cold. The spores grow without air.
3. The conditions found in canned non- to medium-acid foods are ideal for growth and manufacture of the powerful, deadly poison.

   a. The spore itself does not cause disease, but the toxin it produces is usually fatal.
   b. A mere taste of food containing the powerful toxin causing botulism has been known to cause death.
   c. Doubtful food should be destroyed.

4. The usual symptoms are double vision, inability to swallow, speech difficulty, and progressive respiratory paralysis. Frequently, vomiting and weakness also occur.
5. Symptoms usually begin 18 to 36 hours after eating the toxic food.

G. Trichinosis is a disease which comes from eating under-cooked pork containing trichinae: A nematode worm which, in the larval state, is parasitic in humans, hogs and other animals.

1. Careful investigations have shown that the encysted worms found in pork are killed when the meat is sufficiently heated or frozen for varying periods.
2. All pork products should be thoroughly cooked and never served when pink meat is visible.
3. Purchase only government inspected meats.

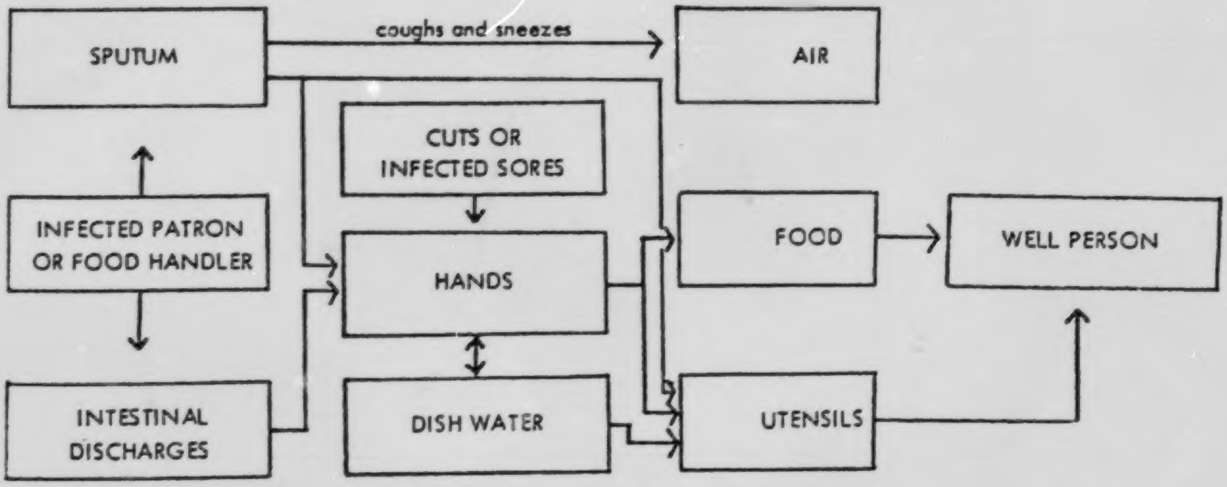
H. Bacillary or amoebic dysentery is a disease resulting from eating food or drinking water contaminated by flies or by infected persons with unclean habits.

1. Source of the infection is the bowel discharge of infected persons, which may be carried on unwashed hands or by flies or other insects that come in contact with sewage. Flies are the most common carrier.
2. The best safeguards are strict personal cleanliness, careful handling of all soiled dishes, and proper washing and sanitizing of dishes and utensils.

I. Chemical food poisoning may be accidentally introduced into food.

1. Residues from chemical sprays may remain on foods.
2. Foods may react with certain metals to produce a chemical poison.
3. Vaporizer flytraps are poisonous and are prohibited by the State Health Department.
4. Any type of fly spray should be used only when food is put away; and all counters, table tops, and other surfaces with which food might come in contact should be washed after a spray is used.

XVIII. METHODS OF TRANSMISSION OF RESPIRATORY AND INTESTINAL DISEASES



XIX. SUMMARY

A. Basic facts of sanitation should be fully understood by management and staff.

1. Every precaution must be taken to see that all foods are handled and stored correctly.
2. Understand what causes foods to become hazardous.
3. Serve only safe food.

B. There are two general types of food poisonings.

1. One type is caused by bacteria.
2. The second is by chemicals such as insecticides, that have been accidentally added to food.

C. Question and answer chart for sanitation facts.

WHAT CAUSES BACTERIAL FOOD POISONING	Growth of bacteria in food and/or the production of certain toxins or poisonous substances before the food was eaten.
WHAT ARE SOME WAYS BACTERIA GET IN THE FOOD	Rats and mice Droplet infection Unwashed hands Sores and boils
WHAT IS THE CONDITION WHICH CAN BE CONTROLLED	Temperature at which food is held.
WHAT ARE NAMES OF SOME OF THE BACTERIA	Salmonella Staphylococcus (produces toxin) Perfringens Botulism (produces toxin)
WHAT ARE THE CONDITIONS FAVORING THEIR GROWTH	Moisture Bland or non-acid foods Temperature of 40°F. to 140° F.
WHAT ARE SOME FAVORITE FOODS OF THESE BACTERIA	Milk and Eggs Meat, Poultry and Seafoods Cream-filled desserts Gravies, soups and sauces, and mayonnaise
WHAT ARE SOME PREVENTATIVE MEASURES	Rodent and insect control. Personnel free from infections. Good personal habits of all school lunch personnel. Thorough cooking of perishable foods followed by immediate serving or refrigeration. Thawing of frozen foods, especially poultry, under refrigeration when possible, or as part of the cooking process.

D. Using the following score sheet provided by the Oklahoma State Department of Health can enable the food service supervisor or manager to check kitchens for sanitary conditions. (Sample No. 1.)

XX. PREVENTING FOOD-BORNE ILLNESS OUTBREAKS

A. To prevent a food-borne illness outbreak from becoming a panic situation, the following plans should be made:

1. The school food service manager should meet with the school authorities to help adopt a plan of operation to avoid confusion should a food-borne outbreak occur.
2. Consider this plan to be followed.
   a. Determine who will contact the:
      (1) Doctor.
      (2) Parents.
      (3) Local health authorities.
      (4) State School Lunch Section.
   b. Prevent misinformation and misunderstandings by assigning an official spokesman to represent the school to the news media.

Oklahoma State Department of Health

INSPECTION REPORT—FOOD ESTABLISHMENTS

City Permit No ______________ State License No ______________ Establishment No ______________

Name of Establishment	Address	City	Zip Code	County

SECTIONS	1976 FOOD CODE CHAPTER REF REQUIREMENT DESCRIPTIONS	DEMERITS	ITEM	(X)VIOLATIONS	REMARKS
FOOD	**2-101.2** — Sources. Sound condition, no spoilage	5*	01		
	2-101.2,301.502 — Original container, properly labeled	1	02		
FOOD PROTECTION	**2-201.302.3.403.406.7.501.601** — Potentially hazardous food meets temperature requirements during storage, preparation, display, service, transportation	5*	03		
	2-302.3.508.601 — Facilities to maintain product temperature	4*	04		
	2-302.3.408.601 — Thermometers provided and conspicuous	1	05		
	2-409 — Potentially hazardous food properly thawed	2	06		
	2-507 — Unwrapped and potentially hazardous food not re-served	4*	07		
	2-201.301.2.402.404-7.502-4.508.9.601.4-201.7-105.601 — Food protection during storage, preparation, display, service, transportation	2	08		
	2-508 — Handling of food (ice) minimized	2	09		
	2-505.6 — In use, food (ice) dispensing utensils properly stored	1	10		
PERSONNEL	**3-101** — Personnel with infections restricted	5*	11		
	3-201.401.5-203.6-501.503.7-302 — Hands washed, clean. Good hygienic practices	5*	12		
	3-301 — Clean clothes, hair restraints	1	13		
FOOD EQUIPMENT AND UTENSILS	**2-301.408.4-101-105.201-205.208.301.5-202** — Food (ice) contact surfaces. Designed, constructed, maintained, installed, located	2	14		
	2-508.4-101.201.4.6.7.8.301-304.5-202.6-404.503.601.804 — Non-food contact surfaces. Designed, constructed, maintained, installed, located	1	15		
	4-201.5-103.4 — Dishwashing facilities. Designed, constructed, maintained, installed, located, operated	2	16		
	5-103.4 — Accurate thermometers, chemical test kits provided, gauge cock (¼" IPS valve)	1	17		
	5-103.4 — Pre-flushed, scraped, soaked	1	18		
	5-103.4 — Wash, rinse water. Clean, proper temperature		19		
	2-301.401.407.5-101.3.4 — Sanitization rinse. Clean, temperature, concentration, exposure time, equipment, utensils sanitized	4*	20		
	5-102 — Wiping cloths. Clean, stored, restricted	1	21		
	2-301.401.5-101.103 — Food contact surfaces of equipment and utensils clean, free of abrasives, detergents	2	22		
	5-101 — Non-food contact surfaces of equipment and utensils clean	1	23		
	5-105.201.2.4.7-105.601 — Storage, handling of clean equipment, utensils	1	24		
	5-203.205 — Single service articles, storage, dispensing, used	1	25		
	4-106 — No re-use of single service articles	2	26		
WATER	**5-103.6-101-105.502.601** — Water source, safe. Hot and cold under pressure	5*	27		
SEWAGE	**6-201.601** — Sewage and waste water disposal	4*	28		
PLUMBING	**2-505.6-301.304-6.7-104.302** — Installed, maintained	1	29		
	6-302-306 — Cross connection, back siphonage, backflow	5*	30		
TOILET AND HANDWASHING FACILITIES	**6-401.501.502** — Number, convenient, accessible, designed, installed	4*	31		
	6-402.3.503.4 — Toilet rooms enclosed, self closing doors, fixtures, good repair, clean. Soap, sanitary towels, handdrying devices provided, proper waste receptacles	2	32		
GARBAGE AND REFUSE DISPOSAL	**6-601.601** — Containers or receptacles, covered. Adequate number, insect, rodent proof, frequency, clean	2	33		
	6-601 — Outside storage area enclosures properly constructed, clean. Controlled incineration	1	34		
INSECT, RODENT ANIMAL CONTROL	**6-601.701.702.7-806** — Presence of insect, rodents — Outer openings protected, no birds, turtles, other animals	4*	35		
FLOORS, WALLS AND CEILINGS	**6-601.7-101.107.301** — Floors, constructed, drained, clean, good repair, covering installation, dustless cleaning methods	1	36		
	6-601.7-201-206.301.502 — Walls, ceiling, attached equipment, constructed, good repair, clean surfaces, dustless cleaning methods	1	37		
LIGHTING	**7-401.402** — Lighting provided as required, fixtures shielded	1	38		
VENTILATION	**7-501.502** — Rooms and equipment vented as required	1	39		
DRESSING ROOMS	**7-601.602** — Rooms clean, lockers provided, facilities clean, located, used	1	40		
OTHER OPERATIONS	**5-103.104.7-701-706** — Necessary toxic items properly stored, labeled, used	5*	41		
	6-701.7-801.808 — Premises maintained, free of litter, unnecessary articles, cleaning maintenance equipment properly stored, authorized personnel	1	42		
	7-802.803 — Complete separation from living, sleeping quarters, laundry	1	43		
	7-804 — Clean, soiled linen properly stored	1	44		

*Items so marked are critical items (see back of inspection report)

Registered Professional Sanitarian ______ Sanitarian No ______ Date ______

Sir: Based on an inspection this day, the items marked (X) above identify the violation in operation or facility which must be corrected as follows:

YOU ARE REFERENCED TO THE BACK OF THIS INSPECTION REPORT, ACTION SECTION, NOTICE NUMBER __________ **for explanation of this notice. Failure to comply with this notice may result in suspension of your permit. An opportunity for an appeal will be provided if a written request for a hearing is filed with the health authority within the period of time established in this notice for the correction of violations.**

Owner, Manager

OHD FORM NO 540 (Rev. 5-1-78)

ESTABLISHMENT STATUS
45 ☐ Demerit Score ______
46 ☐ License not valid
47 ☐ Out of business
48 ☐ New Establishment
49 ☐ License application issued

PURPOSE OF VISIT
50 ☐ Follow-up
51 ☐ Complaint
52 ☐ Food poison investigation
53 ☐ Plan review
54 ☐ Emergency, Disaster

ACTION
55 ☐ Notice to Abate
56 ☐ Notice to Comply
57 ☐ Notice of License Suspension Hearing
58 ☐ Summary Suspension
59 ☐ Court Action

TYPE	CLASS		USE
1	A	☐	Bakery
1	B	☐	Bar-Club-Tavern
1	C	☐	Fountain-Confection
1	D	☐	Delicatessen
1	E	☐	Caterer-Commissary
1	F	☐	Fruit-Vegetable
1	G	☐	Grocery
1	H	☐	Meat Market
1	GH	☐	Grocery-Market
1	I	☐	Mobile Food
1	J	☐	Restaurant
1	T	☐	Temporary
3	A	☐	Drugs
3	B	☐	Manufacturer
3	C	☐	Wholesaler-Warehouse
4		☐	Frozen Food Locker
5		☐	Bottled Water
11		☐	Health Facilities
12		☐	Child Day Care
13		☐	Schools
14		☐	Institution-Non-Profit-Tax Exempt

FILMED FROM
BEST COPY AVAILABLE

234

ACTION

55 ☐ **NOTICE TO ABATE** — Violations specified are to be corrected as required by statute or regulation by the next regular inspection

*56 ☐ **NOTICE TO COMPLY** — Violations denoted by asterisk (*) on front of inspection report are **critical items**. These items are to be corrected within the time period specified by the regulatory authority Failure to correct these violations may result in the suspension of your license A reinspection of your establishment will not be conducted before the lapse of 72 hours from the time of this inspection, unless requested by the owner/manager

*57 ☐ **NOTICE OF LICENSE SUSPENSION HEARING** — You are hereby notified that a hearing will be scheduled under provisions of the Administrative Procedures Act (75 OS 309.314) to determine why your license, as issued under Oklahoma Public Health Code 63 OS 1-1118(a), 1119, should not be suspended You will be advised by letter of the specific items of sanitation in violation, the time and place of the hearing You may appear with or without counsel to present your facts on this matter

58 ☐ **SUMMARY SUSPENSION — You are hereby notified that the license of this establishment is suspended and all food service operations are to be discontinued immediately This suspension is because of the conditions constituting an imminent health hazard as noted on the front of this inspection report (OPHC 63 OS 1-1111) When conditions which caused this suspension have been corrected, you may request a reinspection of your establishment if reinspection finds that appropriate corrections have been made, your license will be reinstated (Administrative Procedures Act — 75 OS 314(c)) (OPHC 63 OS 1-1103)

***59 ☐ **COURT ACTION** — The State Commissioner of Health is authorized to apply to the District Court for, and such court shall have jurisdiction upon hearing and for cause shown to grant, a temporary or permanent injunction restraining any person from violating any of the provisions of Article II (Oklahoma Public Health Code — 63 OS 1-1103)

* You may make a written request for a hearing within the period of time established in this notice If a written request is received within this time period, you will be afforded a hearing to determine if this notice is for probable cause and/or should be continued Such hearing, when requested will be provided prior to reinspection

** The State Commissioner of Health shall have the power to revoke or cancel, or suspend for any period up to one (1) year, any license or permit issued under or in pursuance of the Oklahoma Public Health Code or by the Commissioner when he determines that grounds therefor as prescribed by this Code exists, or that the holder of such license or permit has violated any law, or any of the provisions of this Code or any rules regulations or standards of the State Board of Health filed with the Secretary of State, but he shall first afford the holder an opportunity to show cause why the license or permit should not be revoked, cancelled or suspended (OPHC — 63, OS 1-106, Para 10)

*** (Oklahoma Public Health Code — 63 OS 1-1103)

REMARKS

Item No

Item No	CRITICAL ITEMS
01	**Sources, Sound Condition, no spoilage** — Food shall be obtained from sources that comply with all laws relating to food and food labeling The use of food in **hermetically** sealed containers that were not prepared in a food processing establishment is prohibited
03	**Potentially hazardous food meets temperature requirements during storage, preparation, display, service, transportation** — At all times, including while being stored, prepared, displayed, served or transported, food shall be protected from potential contamination, including dust, insects, rodents, unclean equipment and utensils, unnecessary handling, coughs and sneezes, flooding, drainage and overhead leakage or drippage from condensation The temperature of potentially hazardous food shall be 45°F or below or 140°F or above at all times, except as otherwise provided by the ordinance
04	**Facilities to maintain product temperature** — Enough conveniently located refrigeration/hot food storage facilities shall be provided to assure the maintenance of potentially hazardous food at required temperatures during storage Each (1) mechanically refrigerated (2) hot food facility storing potentially hazardous food shall be provided with a numerically scaled indicating thermometer accurate to ± 3°F located to measure the warmest/coldest part of the facility and located to be easily readable
07	**Unwrapped & potentially hazardous food not reserved** — Once served to a consumer, portions of leftover food shall not be served again except that packaged food, other than hazardous food, that is still packaged and is still in sound condition, may be reserved
11	**Personnel with infections restricted** — No person, while infected with a disease in a communicable form that can be transmitted by foods or who is a carrier of organisms that cause such a disease or while afflicted with a boil, an infected wound, or an acute respiratory infection, shall work in a food service establishment in any capacity in which there is a likelihood of such person contaminating food or food-contact surfaces with pathogenic organisms or transmitting disease to other persons
12	**Hands washed, clean, Good hygienic practices** — Employees shall thoroughly was their hands and the exposed portions of their arms with soap and warm water before starting work, during work as often as is necessary to keep them clean, and after smoking, eating, drinking, or using the toilet Employees shall keep their fingernails clean and trimmed (a) The outer clothing of all employees shall be clean (b) Employees shall use effective hair restraints to prevent contamination of food or food-contact surfaces
20	**Sanitization rinse Clean, temperature, concentration, exposure time, equipment, utensils sanitized** — Tableware, kitchenware and food-contact surfaces of equipment shall be washed, rinsed, and sanitized after each use Equipment and utensils used for the preparation of potentially hazardous food on a continuous or production line basis shall be washed, rinsed, and sanitized at intervals throughout the day on a schedule based on food temperatures, type of food, and amount of food particle accumulation The food-contact surfaces of all equipment and utensils shall be sanitized by an approved process as described in the food sanitation ordinance
27	**Water source, safe, Hot and cold under pressure** — Enough potable water for the needs of the food service establishment shall be provided from a source constructed and operated according to law Water under pressure at the required temperatures shall be provided to all fixtures and equipment
28	**Sewage and waste water disposal** All sewage, including liquid waste, shall be disposed of by a public sewerage or by a sewage disposal system constructed and operated according to law (Temporary food service establishments) see Sec 9-101 through 9-108 Food service sanitation ordinance
30	**Cross connection, back siphonage, backflow** — Plumbing shall be sized, installed, and maintained according to law There shall be no cross connection between the potable water supply and any nonpotable or questionable water supply nor any source of pollution through which the potable water supply might become contaminated The potable water system shall be installed to preclude the possibility of backflow Devices shall be installed to protect against backflow and back siphonage at all fixtures and equipment where an air gap at least twice the diameter of the water supply inlet is not provided between the water supply inlet and the fixture's flood level rim
31	**Toilet and handwashing facilities** — number, convenient, accessible, designed, installed — Toilet facilities, lavatories shall be at least the number required by law, shall be installed according to law, and shall be conveniently located accessible to employees at all times Lavatories shall be located in or immediately adjacent to toilet rooms or vestibules Sinks used for food preparation or for washing equipment or utensils shall not be used for handwashing Each lavatory shall be provided with hot and cold water tempered by means of a mixing valve or combination faucet
35	**Presence of insect/rodents — Outer opening protected, no birds, turtles, other animals** — Effective measures intended to minimize the presence of rodents, flies, cockroaches, and other insects on the premises shall be utilized The premises shall be kept in such condition as to prevent the harborage or feeding of insects or rodents Openings to the outside shall be effectively protected against the entrance of rodents and insects
41	**Necessary toxic items properly stored, labeled, used** There shall be present in food service establishments only those poisonous or toxic materials necessary for maintaining the establishment, cleaning and sanitizing equipment and utensils, and controlling insects and rodents Containers of poisonous or toxic materials shall be prominently and distinctly labeled according to law for easy identification of contents

FILMED FROM BEST COPY AVAILABLE

3. For the protection of the personnel responsible for food preparation, the manager should:
    a. Freeze a sample of each of the food items served each day in the school cafeteria. Keep these samples for approximately five days. Label the samples:
        (1) Product name and content.
        (2) Day, year, and the time of obtaining the sample.
        (3) Person who obtained the sample.
    b. Be sure to obtain samples at different times on the line each day.
        (1) Obtain samples at random.
        (2) Be sure samples are frozen immediately and stored properly.

B. Most food-borne illness outbreaks can be avoided if all sanitation procedures are followed.

XXI. PROCEDURES TO FOLLOW IF A CHILD BECOMES ILL AFTER CONSUMING A SCHOOL MEAL

A. Observe the following steps:

1. DON'T PANIC every time a child becomes ill. All illnesses may not be caused by food poisoning even though a child may have similar symptoms.
2. Send the child to the school nurse if one is on duty.
3. Don't look for something that isn't there. Let the health personnel determine if the illness is a result of food poisoning.
4. Notify the principal and local health authorities.
5. Don't be hasty and assume that the school meals are the reason for the illness. The child's illness may be caused by food eaten outside of the school.
6. Cooperate in every way with the school and health authorities. Answer their questions to the best of your ability. Give all the FACTS that you KNOW.
7. Don't try to determine the source of the food-borne outbreak yourself, leave it up to the experts.

B. Be calm, observe surroundings, write down facts, and preserve samples of all food prepared and served.

1. You may be questioned about:
    a. The specific food items served in the past 48 hours.
        (1) Packer or contract number under which the food was processed.
        (2) Date purchased or received.
        (3) Quantity on hand.
        (4) Methods and conditions of storage.
    b. Methods of preparation and holding.
    c. The time the meals were served.
    d. The number of persons who ate and percent affected.
    e. Symptoms, severity, and duration of illness.
    f. The time interval from eating the food to the beginning of the symptoms. (The time interval varies with the type of food-borne outbreak.)
    g. Symptoms of food borne illness:
        (1) Stomach cramps.
        (2) Severe nausea.
        (3) Vomiting.
        (4) Diarrhea.
    h. Employees' health status.
2. Release of public information.
    a. Give reporters all the *facts* that you *know*.
    b. Don't speculate.

c. Don't be afraid to say "I don't know."
d. Refer reporters to local health authorities, who are investigating the case.

XXII. SAFETY IN THE SCHOOL FOOD SERVICE FACILITY

A. Human error, not mechanical failure, has been found to be responsible for nearly all accidents.

B. Eliminate accidents. Build a safety consciousness throughout the kitchen.

1. An individual must want to learn about safety before becoming efficient in practicing it.
2. Safety procedure for each food service operation should be learned by everyone involved.

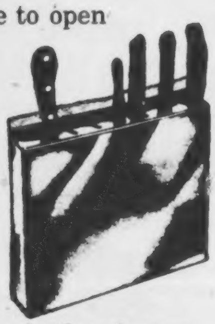
C. Safety meetings and first aid classes should be held for all personnel. Use outside specialists in the various phases of safety and first aid.

D. Essential requirements for safety protection:

1. A first aid cabinet, which is kept up-to-date, must be available at all times.
2. Adequate and appropriate fire extinguishers must be provided. All personnel must be trained as to correct usage of the extinguishers.
3. A fireproof, woven asbestos blanket size 48 × 72 inches is recommended to smother fires. An ordinary blanket may be used.
    a. Fire blankets are to be used for smothering grease or personal clothing fires.
    b. They should be stored in roll-on wall brackets or in a cabinet with a breakable glass front panel.
4. Where possible, sprinkler systems should be installed. New institutions are required to have automatic sprinkling systems.

E. Procedures and practices to follow for a safety program: The following are suggestions only; they do not cover the entire field. Each system should design a safety program applicable to that system.

1. The beginning employee should be trained immediately in safety habits.
2. An accident reporting system should be adopted and used conscientiously.
3. All employees must be instructed in the use of all the equipment.
4. Floor surfaces of the kitchen and dining room should be kept clean.
5. A commercial can opener that leaves no sharp edges on the can should be used.
6. All portable tables should be equipped with stationary locks.
7. All doors and drawers should be kept closed when not in use.
8. Move cautiously rather than hastily.
9. Guard against spillage in both preparation and garbage area.
10. If spillage occurs, it should be cleaned up immediately. The same applies to glass breakage.
11. Do not climb higher than two steps from the top of a stepladder. Be sure to open stepladder fully.
12. Safety storage for all kitchen knives should be provided.
13. Knives or glass articles should never be thrown into water; carelessness or being unable to see them may cause accidents.
14. When any piece of equipment is used, be sure to follow the directions.
15. Employees must be instructed as to the proper manner for lifting, carrying, and lowering heavy loads. Lift with the back straight and knees bent to prevent strain.
16. Get help to move or lift heavy equipment, cases, boxes, or bags.
17. Use dollies whenever possible for handling crates, boxes, storage cans, and other heavy equipment.
18. Each employee should be responsible for safety in the School Food Service Program.



XXIII. FIRST AID

A. General direction for giving first aid.

1. Attend to urgent cases, those with severe bleeding, stoppage of breathing, or poisoning.
2. Keep victim lying down.
3. Prevent added injury.
4. Use first aid measures for shock.
5. Examine for all injuries: wounds, burns, bruises, fractures, and internal injuries.
6. Plan what first aid procedures are to be taken and carry out the plan.

B. Emergency first aid measures.

1. Wounds and bleeding.
    a. Overall objective: Stop bleeding, prevent infection.
    b. Methods of stopping bleeding:
        (1) Direct pressure.
        (2) Pressure on supplying blood vessel.
        (3) Tourniquet. (Use only as a last resort and follow correct instructions.)
    c. First aid for wounds without severe bleeding (infection often results through neglect).
        (1) Wash hands with soap and warm water.
        (2) Wash wounds with soap and warm water.
        (3) Apply sterile dressing and bandage snugly.
        (4) See doctor if infection does develop.
2. Shock.
    a. Most commonly caused by serious accidents but can follow minor injuries.
    b. Objective: Prevent or reduce shock by keeping victim lying down and comfortable.
    c. Essentials for first aid:
        (1) Keep victim lying down.
        (2) Maintain normal body temperature.
        (3) Provide small amounts of water if thirsty.
        (4) Attend to injuries that caused shock.
3. Artificial respiration and asphyxia.
    a. Common causes of stoppage of breathing: Electrocution, gas poisoning, drowning, or any obstruction to the air passage.
    b. Keep airways open. Keep chest in an induced breathing rhythm by applying and releasing pressure at regular intervals.
    c. Basic rules for giving mouth-to-mouth artificial respiration:
        (1) Make sure airway is clear (nothing blocking airway, such as dentures).
        (2) Tilt head far backward.
        (3) Cause lower jaw to jut outward.
        (4) Pinch victim's nostrils, open own mouth wide.
        (5) Cover victim's mouth with yours, exhale forcefully while watching victim's chest rise.
        (6) Turn face away to get fresh breath of air.
        (7) Continue procedure at a rate of 12 times per minute (once every five seconds) until medical aid arrives.
4. Fainting.
    a. If a person feels faint, seat the victim and fan the face.
    b. Lower head to knees.
    c. If victim becomes unconscious, lay the person down with head turned to the side.
    d. Loosen clothing.
    e. Open windows.

f. Wave smelling salts or aromatic spirits of ammonia under nose.
g. After consciousness returns, keep patient lying quiet for at least 15 minutes.
h. If faint lasts for more than a few minutes, send for emergency medical assistance.

5. Burns and the ill effect of excessive heat.

a. Objective: Relieve pain, prevent infection, give first aid for shock.
b. Types:

(1) Thermal (Heat).
(2) Chemical.
(3) Sunburn.

c. First aid for burns:

(1) Mild burn (skin unbroken — no blisters).

(a) Hold under cold running water until pain subsides.
(b) Apply and secure sterile bandage.

(2) Severe burns: Send for emergency medical assistance.

(a) Apply sterile compresses.
(b) Do not break blister or try to clean burn.
(c) Keep patient quiet and comfortably warm until medical assistance arrives.

6. Injuries to bones, joints, and muscles.

a. Objective: Immobilize broken ends and joints on each side of break.
b. Slips and falls are the main causes of fractures in school food service operations.

c. First aid treatment for:

(1) Sprains (joint injuries)—treat as fracture.
(2) Sprains (muscle injuries)—rest, warm applications.

7. Emergency transportation.

a. Objective: Don't disturb victim while planning, preparing, and transferring.
b. Keep injured body parts from twisting, bending, and shaking. (American Medical Association notes that of injuries resulting in permanent crippling, over 50% are due to improper handling and transportation.)
c. Don't move victim unless absolutely necessary.

C. A copy of "Food Service Safety Check List to Locate Hazards" may be obtained from The National Safety Council, 444 North Michigan Ave., Chicago, IL. 60611. This list could be incorporated into a preventative safety program.

BIBLIOGRAPHY

BOOKS

Frazier, W.C., *Food Microbiology*. Second Edition, New York, New York: McGraw-Hill Co., 1967.

Guthrie, Rufus K., *Food Sanitation*. Westport, Connecticut: The AVI Publishing Co., 1972.

Longree, Karla, *Quantity Food Sanitation*. Second Edition, New York, New York: Wiley-Interscience, 1972.

Longree, Karla and Blaker, Gertrude G., *Sanitary Techniques in Food Service*. New York: John Wiley and Sons, Inc., 1971.

National Institute for the Foodservice Industry, *Applied Food Service Sanitation*. Chicago, Illinois: NIFI, 1974.

Peddersen, Raymond B., *SPECS: The Comprehensive Foodservice Purchasing and Specification Manual*. Boston, Massachusetts: Cahners Books International, Inc., 1977.

BULLETINS

Bryan, Frank L., *Control of Foodborne Diseases in the Food Service Industry*. Bureau of Training, Center for Disease Control, Public Health Service, Atlanta, Georgia.

Bryan, Frank L., *Diseases Transmitted by Foods*. HEW Publication No. (CDC) 78-8237, Bureau of Training, Center for Disease Control, Public Health Service, Atlanta, Georgia. Revised March 1978.

Bryan, Frank L., *Foodborne Diseases of Contemporary Importance*. Bureau of Training, Center for Disease Control, Public Health Service, Atlanta, Georgia. 1977.

Pratt, Harry D. and Johnson, Wilfred H., *Sanitation in the Control of Insects and Rodents of Public Health Importance*. HEW Publication No. (CDC) 76-8138, Bureau of Training, Center for Disease Control, Public Health Service, Atlanta, Georgia. 1976.

Scriptographic Booklet, *48 Ways to Foil Food Infections*. No. 1110D-7-74, Channing L. Bete Co., Inc., Greenfield, Massachusetts. 1974.

Scriptographic Booklet, *What Every Homemaker Should Know About Food Germs*. No. 1139D-6-74, Channing L. Bete Co., Inc., Greenfield, Massachusetts, 1977.

Wisconsin Administrative Code, Chapter H 96, Restaurants. No. 203, Environmental Health Bureau, Division of Health, Department of Health and Social Services, Madison, Wisconsin. 1972.

U.S. Department of Agriculture, *Food Storage Guide for Schools & Institutions*. USDA Program Aid No. 403, Food and Nutrition Service, Child Nutrition Division, U.S. Government Printing Office, Washington, D.C. Revised 1975.

U.S. Department of Health, Education, and Welfare, *Foodborne and Waterborne Disease Outbreaks—Annual Summary 1976*. HEW Publication No. (CDC) 78-8185, Bureau of Training, Center for Disease Control, Public Health Service, Atlanta, Georgia. 1977.

U.S. Department of Health, Education and Welfare, *Sanitary Food Service Instructor's Guide*. Department of The Army, The Navy and The Air Force, TM8-525, P-1333, AFP 161-22, Public Health Service Publication No. 90, Cincinnati, Ohio. Revised 1969.

U.S.D.A.: *Protecting Our Food*, Yearbook of Agriculture 1966. U.S. Government Printing Office, Washington, D.C. 20402.

National Sanitation Foundation: *Sanitation Aspects of Food Service Facility Plan Preparation and Review*, National Sanitation Foundation, NSF Building, P.O. Box 1468, Ann Arbor, Michigan, 48106.

SECTION VIII
SCHOOL FOOD SERVICE MANAGEMENT AND PERSONNEL ORGANIZATION

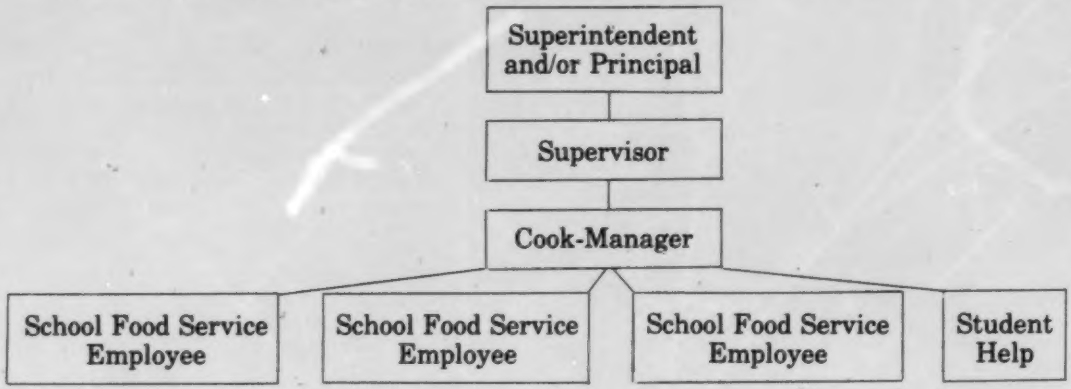
Page

I. Management and Organization are the Key to a Successful Program 249
II. Efficient Management Comes First 250
    School Food Service Personnel Evaluation (Sample No. 1) 253
    School Food Service Employee Report Form (Sample No. 2) 254
III. Labor Management 255
IV. Scheduling Work 260
    Sample Job Description (Sample No. 3) 261
    Individual Work Schedule (Sample No.4) 263
    Individual Work Schedule (Sample No. 5) 264
    Daily Unit Work Schedule for 3 Kitchen Personnel (Sample No. 6) 265
    Daily Unit Work Schedule for 4 Kitchen Personnel (Sample No. 7) 266
    Kitchen Cleaning Schedule (Sample No. 8) 267
    Cleaning Schedule (Sample No. 9) 268
V. Equipment Management 270
VI. Work Simplification 270
VII. Principles of Motion Economy 271
VIII. Time and Work Shortcuts 272

I. MANAGEMENT AND ORGANIZATION ARE THE KEY TO A SUCCESSFUL PROGRAM

A. A basic plan is necessary.

1. An efficient and economical operation should:
    - a. Follow organization policies.
    - b. Follow principles of management.
    - c. Keep cook-managers informed on organization, policies, and procedures.
2. Devices to keep the basic plan in operation and to use for a clear presentation of personnel and their responsibilities to both top management and to employees are:
    - a. Organization chart—shows graphically the lines of authority and the relationship of parts to each other and the whole.
    - b. Job Analysis—Refers to the procedure used in collecting information about one specific job.
    - c. Job description—Is the written record of duties and responsibilities of a particular job.
    - d. Job evaluation—Is a written record of the measurement of individual performance.
3. Devices used for carrying out the basic plan are usually at the discretion of the superintendent and/or the principal of each school.
4. The following chart may be used or adapted for use in a school.


Superintendent and/or Principal
Supervisor
Cook-Manager
School Food Service Employee
School Food Service Employee
School Food Service Employee
Student Help

B. Understanding and cooperation between the administration and management are the keys to a successful program.

C. Basic management principles of school food service.

1. Defined as planning, directing, and controlling the development and operation of the School Food Service Program on the basis of:
    - a. Nutrition.
    - b. Education.
    - c. Finance.
2. Functions of management: School feeding is a big business and in any business there are management and operational functions.
    - a. Management functions:
        - (1) Setting Standards.
        - (2) Policy Making.
        - (3) Planning.
        - (4) Organizing.
        - (5) Communicating.
        - (6) Controlling.
        - (7) Supervising.
        - (8) Evaluating.

b. Operational functions:

   (1) Purchasing.
   (2) Receiving.
   (3) Storing.
   (4) Preparing food.
   (5) Serving.
   (6) Cleaning.

II. EFFICIENT MANAGEMENT COMES FIRST.

A. Functions of management are continuous with each function influencing the other.

   1. Operating functions are important, but may be unsuccessful without efficient management.
   2. Management functions are measured by standards which:

      a. Establish values and objectives.
      b. Provide procedures to evaluate or control.
      c. Should be written specifically, clearly understood, and accepted by all.

B. Developing standards.

   1. Usable standards:

      a. Must be written and recorded, because otherwise they will degenerate by practice.
      b. Must be constantly available and accessible to all concerned.
      c. Must be applicable to all situations, under any conditions, without exception.
      d. Must be reasonably stable or permanent.
      e. Must be clear, specific, understandable, and acceptable.
      f. Can be applied quickly and economically.
      g. Must represent the best current knowledge and practice.
      h. Must be attainable under normal conditions.

   2. Evaluate a standard by observing a specific job. For example:

      a. The number of meat patties that can be formed per minute.
      b. The time it takes to dip 400 cookies.
      c. The number of rolls that can be panned per minute.
      d. The time it takes to prepare a lettuce salad for 300.
      e. The time it takes to clean the dishmachine.

   3. Apply Parkinson's Law: "The time required to complete a job is equivalent to the time given to do the job." i.e.:

      a. A person many times will take two hours to do a job if given two hours, while the time actually required is half an hour.
      b. Employees like to know what is expected of them.

   4. Managers usually get "what they expect."
   5. Employees are happiest when they know:

      a. What they are expected to do.
      b. How they are expected to do it.

C. Policy making: A "policy" is a broad, general statement of principles to use as a guide.

   1. Should be written and approved by the board to be considered "policy" instead of a "practice." Manual can be:

      a. A few mimeographed sheets stapled together.
      b. Printed and bound.

   2. Used to attract, motivate, and retain qualified personnel.
   3. Should be fair and equitable to all.
   4. Should be made available to all.

5. Should be thoroughly understood by all.
6. Used to prevent questions and minimize doubts, conflicts, and uncertainty.
7. The policy manual should include:

   a. School's philosophy of food service.
   b. Objectives of American School Food Service Association.
   c. Departmental goals, both long and short range.
   d. National School Lunch Program requirements.
   e. Meal pattern.
   f. Employees' responsibilities.
   g. Standards for food service personnel.

      (1) Personal appearance and grooming.
      (2) Work habits and food handling.

   h. Personnel policies.

      (1) Application for employment.
      (2) Absenteeism.
      (3) Dismissals.
      (4) Employee lunches.
      (5) Gifts from vendors.
      (6) Health requirements.
      (7) Leftover foods.
      (8) Insurance and benefits.
      (9) Leave policy.
      (10) Rest periods or coffee breaks.
      (11) Signing in and out.
      (12) Smoking.
      (13) Substitutes.
      (14) Training.
      (15) Uniforms.
      (16) Visitors and use of the telephone.
      (17) Visiting other lunch programs.
      (18) Professional associations.
      (19) Overtime pay.

   i. Management policies:

      (1) Adult lunches.
      (2) Collection for school lunches.
      (3) Charged lunches.
      (4) Coffee breaks.
      (5) Custodial services in dining room.
      (6) Free meals.
      (7) Use of kitchen.
      (8) Lunch count.
      (9) Sale of extra food.

   j. Staffing assignment, steps, and grades.
   k. Salary schedules.
   l. Employee fringe benefits.

D. Planning.

1. A good plan answers these questions:

   a. What should be done?
   b. When should it be done?
   c. How should it be done?
   d. Why should it be done?

2. Planning includes:
    a. Preparing a budget.
    b. Planning menus.
    c. Pre-costing menus.
    d. Establishing a system of purchasing.
    e. Setting standards.
    f. Staffing.
    g. Training.

E. Organizing personnel.
1. Let people know their job assignments.
2. Give adequate training for this particular job.
3. Delegate authority and responsibility to achieve maximum production from each employee.
4. Make work schedules and write job descriptions for employees to follow if they are to meet standards required in the operation.

F. Communicating.
1. Keep everyone informed. Some managers can fluently express themselves, but fail to communicate. Effective communication on ALL levels is very important.
2. Attitude and behavior of management toward the workers greatly influence the attitude and cooperation of personnel.
3. The manager's job of communication is to:
    a. Communicate to everyone.
    b. Build a dedicated team of employees who are thoroughly sold on objectives and goals.
    c. Motivate and inspire.
    d. Improve and/or change attitudes.
    e. Develop professionalism and pride in work.
    f. Keep lines of communication open.

G. Controlling is:
1. One of the most important factors that management must establish in quantity food production.
2. Planning learning experiences.
3. Establishing standards for:
    a. Quality of food.
    b. Quantity of food.
    c. Food costs.
    d. Labor costs.
    e. Job performance.
    f. Public relations.
    g. Record keeping.

H. Supervision.
1. Controls the performance of the employee.
2. Assures that all employees activities conform with the plan and standards.
3. The supervisor or manager should understand and know about each job to which the employee is assigned.

a. Why it is done.
b. Best and most efficient way to do it.
c. What results are expected.

4. Performance of all supervisory functions requires one hour good supervision for each 10–12 hours of productive work.
5. "Working supervisors" may work full speed ahead and neglect to supervise because of confusion and indifference.
6. A supervisor must realize that supervisory responsibilities should come first.
7. A supervisor should evaluate personnel on an equitable basis. A variety of forms may be utilized for personnel evaluations. Sample No. 1 and Sample No. 2 have been found to be useful in some operations.

SCHOOL FOOD SERVICE PERSONNEL EVALUATION (Sample No. 1)

NAME ______________________ TITLE ______________________

INSTRUCTIONS: Complete this form by circling the appropriate number that best describes the person being rated in each of the factors. The definitions in each block are to be used as guides to help determine a rating.

DATE OF EVALUATION ______________________

PERFORMANCE FACTORS	Possible Total Pts.	PERFORMANCE GRADE					
		Far Exceeds Requirements of the job	Exceeds requirements for the job	Meets requirements of the job	Partially meets requirements of the job	Does not meet requirements	TOTAL POINTS
[1]QUALITY OF WORK	52						
Knowledge of job as applied to performance		16	12	8	4	0	
Accuracy and thoroughness		16	12	8	4	0	
Quantity of productive output		12	9	6	3	0	
Economy of materials		8	6	4	2	0	
[2]DEPENDABILITY	36						
Follows instructions		12	9	6	3	0	
Judgement (when not supervised)		8	6	4	2	0	
Economy of time (own)		8	6	4	2	0	
Punctuality and attendance.		4	3	2	1	0	
Safety habits		4	3	2	1	0	
[3]COMPATABILITY	12						
Cooperation with fellow employees		8	6	4	2	0	
Economy of time		4	3	2	1	0	
TOTAL POINTS	100	100	75	50	25	0	

The different factors have been assigned a maximum number of points. Example 2 - DEPENDIBILITY - following instructions, 12 points is maximum (Far Exceeds Requirements) on a sliding scale; if the person "Partially Meets Requirements" a score of *3* might be obtained. Circle the number in the appropriate box and transfer the number to the "TOTAL POINTS" column. Add the "TOTAL POINTS" column for the composite score.

Signature of Person doing the appraisal ______________________

Signature of Person being appraised ______________________

SCHOOL FOOD SERVICE EMPLOYEE REPORT FORM (Sample No. 2)

1. Evaluations provide measurement for work performed.
2. Factors to consider in employee evaluations:

    a. **Interest**—Consider interest in children, promotion of the school food service program, professional growth, and cooperation with school staff and civic organizations.
    b. **Knowledge of Job**—Consider how well the employee knows the job to be performed.
    c. **Accuracy or Quality**—Consider the performance of sanitary and safety practices in food handling to meet the standards of the department in accuracy, neatness, and thoroughness.
    d. **Performance**—Consider net productivity and consistency of volume of work produced.
    e. **Alertness**—Consider attentiveness, application to duties, the degree to which the employee concentrates on work at hand and initiates and improves the way of performing the job.
    f. **Health**—Consider physical suitability and emotional stability for the work; also, take into consideration the amount of strength and energy the employee appears to have as reflected by the ability to maintain steady output and attendance without time off.
    g. **Dependability**—Consider reliability in the execution of assigned tasks, dependability in following instructions, whether the employee appears to have endurance as reflected by the ability to maintain steady output and attendance without time off.
    h. **Work Attitude**—Consider the interest in the work. When emergencies arise and more than usual effort is necessary, does the employee respond with enthusiasm? Enthusiasm should be judged by what the employee does rather than by what is said.
    i. **Attitude toward others**—Consider how pleasantly the employee works and shares with fellow workers, attitude toward supervision, how promptly and pleasantly employee responds to suggestions to "lend a hand" if necessary.
    j. **Adaptability**—Consider employee's ability to meet changing conditions, to respond to emergency jobs, and to new procedures.
    k. **Loyalty**—Consider employee's ability to perform and follow basic policy decisions even though they may not be in agreement with personal preference. Are complaints kept within the department?

3. Factors being considered in employee evaluations correspond to "Factors To Be Rated" in the chart on the opposite page.

SCHOOL FOOD SERVICE EMPLOYEE EVALUATION REPORT FORM
(Sample No. 2 continued)

Name____________________ Position____________________

INSTRUCTIONS: Managers or supervisors may find this an effective tool to rate employees. Place check mark under appropriate heading.

FACTOR TO BE RATED	EXCELLENT	GOOD	FAIR	POOR
A. Interest				
B. Knowledge of Job				
C. Accuracy or Quality				
D. Performance				
E. Alertness				
F. Health				
G. Dependability				
H. Work Attitude				
I. Attitude Toward Others				
J. Adaptability				
K. Loyalty				

COMMENTS____

Signed________________ Employee________________ Date__________
(Evaluator)

III. LABOR MANAGEMENT

A. Staffing: No magic formula can be used for staffing all food service programs. Many variables will affect the number of people and number of hours needed from one program to another.

1. Major factors that influence number of hours and cost of labor:
    - a. Smaller operations (less than 200 meals) will get fewer meals per labor hour.
    - b. Number of serving lines needing to be staffed often means more people working shorter hours.
    - c. Number and length of lunch periods. When lunch periods are 45 to 60 minutes long or are increased to 4 or 5 lunch periods, additional labor hours are usually required.
    - d. Self-contained units versus satellite units.
    - e. The extent of choices offered on menus in both elementary and/or secondary school.
    - f. Permanent ware versus disposables.
    - g. Type and arrangement of equipment.
    - h. Variables in food production standards.
    - i. Quantity of prepared food purchased.
    - j. Variables in the cleanliness of equipment and facilities.

2. Total man hours in an average school should range from 12 to 16 meals per labor hour if it:
    a. Is a self-contained operation.
    b. Has limited menu choices.
    c. Uses school baked bread.
    d. Uses permanent ware.
    e. Is adequately equipped.
    f. Is adequately staffed and trained.
3. Meals per labor hour should be calculated on the basis of total number of meals served divided by total hours of labor equals number of meals per labor hour.

$$\frac{\text{Total number of meals served}}{\text{Total hours of labor}} = \text{Number of meals per labor hour}$$

4. Consider the following:
    a. Number of people needed.
    b. Number of hours required.
    c. Distribution of labor hours.
    d. Number of personnel needed at serving time.
    e. Schools serving 100 or more meals per day may find the following guide helpful in planning labor hours.

       100 meals @ 12 meals per labor hour = 8⅓ hours labor
       200 meals @ 13 meals per labor hour = 15½ hours labor
       400 meals @ 14 meals per labor hour = 28½ hours labor
       650 meals @ 15 meals per labor hour = 43⅓ hours labor
5. If total labor hours are higher than the figures suggested above:
    a. Review purchasing and menu planning procedures.
    b. Determine the amount and type of equipment available.
    c. Re-evaluate the number and skills of employees.
    d. Determine the need for employee training.
    e. Study time and work schedules of employees.
6. If total labor hours are lower than the figures suggested above, re-evaluate the:
    a. Quality and kind of food served.
    b. Variety of menu items offered.
    c. Time spent in cleaning.
    d. Quality of service offered.
7. Labor needs depend on:
    a. The type of menu served.
    b. The number of meals served.
    c. Kind and capacity of the equipment.
    d. Arrangement of equipment.
    e. Length of serving period.
    f. Number of serving lines.
    g. Amount of student labor in addition to adult labor.
    h. Extent of janitorial duties performed by food service personnel.
8. The number of meals produced should increase with experience and efficiency.
    a. The needs are higher in secondary schools.
    b. Part-time workers should be employed as needed rather than too many full-time workers.
    c. Staggering work hours increases efficiency.

B. The school food service supervisor or manager is an important key in the management process.

1. Duties and responsibilities of the manager.

    a. Cooperating with principal, director, and faculty in planning, developing, and utilizing the School Food Service Program as a laboratory to provide learning experiences for pupils.
    b. Assisting other school food service personnel in interpreting the goals and objectives of the School Food Service Program to the pupils, teachers, parents, and to the community.
    c. Cooperating with health officials in supporting local and state public health laws and codes. Encouraging each worker to observe high standards of grooming and work habits.
    d. Belonging to and providing leadership in professional organizations. Participating in and promoting in-service training, conferences, and continuing educational programs for self and other personnel.
    e. Maintaining adequate and accurate records and controls to include:

        (1) Finances.
        (2) Personnel.
        (3) Inventories.
        (4) Operational reports and records.
        (5) Purchasing of food, supplies, and equipment.

    f. Developing and maintaining a systematic food purchasing system.
    g. Supervising and assisting in the production, service, and storage of food.
    h. Maintaining a file of standardized recipes and instructing personnel in the use of the recipes.
    i. Outlining specific duties and work schedules for all employees.
    j. Instructing and supervising employees on the job, including the correct use and maintenance of equipment.
    k. Planning the use of equipment for efficiency and economy.
    l. Creating opportunities to work with the classroom teacher and parents on activities relating to the program.
    m. Playing a vital role in the nutrition education of children.
    n. Creating an atmosphere in the school cafeteria that inspires pupils and faculty to participate in the program.

2. Efficient managers (whose employees are productive in both quantity and quality of work) are ones who:

    a. Are held responsible and accountable for work performed.
    b. Organize the work to be done.
    c. See that all tools, materials, and equipment are available to employees.
    d. Train, prepare job breakdowns, demonstrate, and follow-up.
    e. Eliminate waste in time, materials, and methods.
    f. Standardize work habits.
    g. Show appreciation for work performed.
    h. Listen to ideas, suggestions, and problems.
    i. Discipline when it is required.
    j. Recommend awards, promotions, and transfers, when appropriate.
    k. Motivate job pride and cooperative team spirit.
    l. Are consistently aware of progress and work flow of all employees.

3. Guides for supervision:

    a. Motivate employees and others to want to do things.
    b. Give employees security with the organization.
    c. Give them a sense of belonging.
    d. Have an incentive program.

    - e. Consistently set high standards.
    - f. Give on the job training to meet qualifications.
    - g. Promote people on true merit regardless of tenure.
    - h. Have good schedules or work organization.
    - i. Be aware of the employees' problems.
    - j. Know their limitations.
    - k. Know their desires.
    - l. Tell employees the importance of their jobs.
    - m. Seek suggestions for improvement.
    - n. Encourage flow of communications. (Both the words chosen and the manner of speaking are important.)
    - o. Realize that inefficient persons lower morale.
    - p. Promote team work; obtain and make use of suggestions.

C. Basic responsibilities of all school food service personnel.

1. Know the aims, purposes, and policies of the school food service program.
2. Know and maintain desirable standards of operation in the program.
3. Have a genuine interest in children and an understanding of their nutritional and social needs.
4. Work with the superintendents, principals, teachers, parents, and children to interpret the school food service program to the community and to make it an educational asset to the school and the community.
5. Train continuously to maintain qualifications for the job.
6. Work cooperatively with children, faculty, and parents, to achieve the greatest benefits from the program.
7. Practice desirable health and work habits.

D. The school food service student workers must be trained. If they are allowed to work in the program, they should be:

1. Carefully supervised.
2. Informed of duties and job assignments as posted.
3. Trained by the food service manager in:
    - a. Rules.
    - b. Regulations.
    - c. Health habits.
    - d. Work schedules.
    - e. Sanitary food service techniques.

E. General Expectations for food service workers.

1. Student employees
    - a. If uniforms are not furnished by the school, clean aprons, preferably furnished by the school, are to be put on when a student reports for work.
    - b. Wearing apparel should consist of clean, washable clothes. (Sweaters, sweat shirts, or dressy clothes are not appropriate.)
    - c. Hair should be properly groomed.
    - d. Hair nets and/or restraints must be worn while working in all kitchen areas.
    - e. Wash hands thoroughly with soap and water when reporting for work.
    - f. Clean fingernails carefully.
    - g. Report to work promptly.
    - h. Avoid placing hands on hair or face while working.
    - i. Do not eat on the job (preferably eat before starting to work).
    - j. Do not play on the job.
    - k. Do not work when ill with colds, if sores are present, or when general health is not good.
    - l. Notify the manager early if unable to work so a substitute may be called.
    - m. Present a pleasing appearance.
    - n. Discuss problem areas with the manager only.

2. Adult employees:

   a. Be able to read, adjust, and follow standarized recipes.
   b. Practice food handlers rules for sanitation.
   c. Dress appropriately in clean uniforms, comfortable shoes, and hairnets and/or hair restraints on the job.
   d. Be prompt and dependable.
   e. Be able to follow time schedule.
   f. Perform daily tasks as assigned by supervisor.
   g. Be able to make decisions in the absence of a supervisor.
   h. Have a genuine interest in children and understand their nutritional and social needs.
   i. Be able to perform physical labor, including standing for long periods of time, and lifting heavy objects.
   j. Understand the importance of knowing how and using care in the cleaning of all food service equipment.

F. Training and orientation of new employees.

1. Responsibilities of the manager include instructing the new employee.

   a. Present a copy of the policy manual to each new employee.
   b. Discuss the following topics:

   (1) The National School Lunch Program.
   (2) Definition of a school lunch or breakfast.
   (3) Employee job description. (See Sample No. 3.)
   (4) Duties and responsibilities assigned to employee.
   (5) Response to authority.
   (6) Wages, pay day, holidays, and vacations.
   (7) Working hours, time sheets or cards, overtime.
   (8) Policy about meals.
   (9) Coffee breaks.
   (10) Wearing apparel.
   (11) Training.
   (12) Absenteeism (sickness or other).
   (13) Promotion and advancement.
   (14) Suggestions and complaints.
   (15) Local, state, and national association membership.
   (16) Local, district, and state meetings.
   (17) Leftover food.

2. Suggestions for first day orientation for new employee.

   a. Tour of the kitchen conducted by manager.

   (1) Introduce new employee to all other employees. (All employees should wear a name tag so it will be easier to remember names.)
   (2) Explain different departments and functions of the kitchen.

   (a) Where equipment is kept.
   (b) Keeping equipment at each work station.
   (c) Arrangement of counter set-up and tools for serving.
   (d) Time schedules.
   (e) Serving schedules.
   (f) Coffee breaks.
   (g) Lunch period.

   (3) Explain routine for signing in and out; stress importance of promptness.

   b. Explain the menus, the menu planning book and/or production sheets.
   c. Provide a copy of the work schedules and explain the importance of cooperative team effort.

   - d. Explain proper portioning with the correct tools, and its relation to customer satisfaction and food cost.
   - e. Schedule a demonstration on the use of the dishmachine, steamer, mixer, and other major equipment.
   - f. Emphasize appearance, neatness, and cleanliness of both personnel and work areas.
   - g. Explain the importance of each employee's contribution to a pleasant and productive working environment.

IV. SCHEDULING WORK

The work schedule is a detailed listing of duties to be performed by an individual.

A. Purpose:

1. To organize work.
2. To delegate duties and responsibilities.
3. To eliminate wasted time and motion; to provide improved sequence with set standards.
4. To train personnel.

B. Results:

1. Eliminates controversy over responsibility of duties.
2. Better distribution of work loads.
3. Simplifies instructions.
4. Saves time, energy, and efficient use of equipment to complete a job.
5. Gives confidence to management and employees; security and pride are increased.
6. May decrease payroll cost if labor hours are more productive.
7. Promotes a more organized and efficient program; reduces stress and strain.
8. Eliminates confusion. (Each employee will know exactly what is expected.)
9. Designates job responsibility. (Employees cannot ignore a task and say they didn't know it was their job.)
10. Designates a time for completion of all jobs.
11. Assures that meals will be prepared on time.
12. Helps to balance the work load.
13. Makes it less likely that a job will remain undone.

C. Factors to consider when planning a work schedule:

1. Employee input.
2. Total number to be fed each day.
3. Menus and required pre-preparation.
4. Labor hours allowed for number fed.
5. Available personnel.
6. Skill of employee.
7. Total operations or work to be accomplished within a day.
8. Daily, weekly, and monthly cleaning.
9. Available equipment.
10. Physical layout of the food service facility.
11. Evaluation through observation.
12. Policies and procedures of the school.

D. Successful work schedules are:

1. Developed cooperatively by manager and workers.
2. Revised as needed to keep them up-to-date.
3. Posted and thoroughly understood by workers.
4. Flexible; every work schedule should include the phrase "after these duties are completed, assist with remaining work to be done."
5. Prepared for positions, not individuals.
6. Personalized for specific programs; variations include:
   - a. Number of people served.
   - b. Physical layout of facility.

SAMPLE JOB DESCRIPTION (Sample No. 3)

JOB CLASSIFICATION: Cook

Supervision	By cafeteria manager. May supervise second cook or helper. If second cook, may be supervised by first cook.
Hours	Vary, usually 3 to 6 hours per day. May start as early as 7:00 a.m.
Equipment Used	Any piece of large or small equipment in the institutional kitchen may include: ranges, fryers, ovens, mixers, vertical cutter mixers, slicers, steamers, steam kettles, freezers, refrigerators, ice machines, dishmachine, liquid and dry measures, scales, bowls, whips, sinks, pots and pans.
Qualifications—Physical	Health, strength and endurance to withstand walking, standing, lifting and other physical activity during the working hours. Can tolerate heat and steam and most cleaning compounds. Free from tuberculosis and other infectious diseases. Good manual dexterity and coordination. Age 16 years or older.
Qualifications—Mental	Average or better intelligence. Ability to understand, read and speak English. Emotional stability. Enthusiasm for job. Honest. Initiative to plan own work and work of cook's helpers. Versatility to do whatever job is needed.
Education	No requirement. Training is on-the-job. No prior experience required.
Social	Ability to get along with others. Ability to accept or give criticism and directions. Must like children. Pleasant disposition.
Appearance	Neat, clean and well-groomed.
Duties Performed	Duties include mainly the cooking of main dishes and vegetables, but may also include every job in the kitchen. These may be: Food preparation Baking & cooking Cleaning of kitchen equipment Dishmachine operation Serving Potwashing Cashier Sweeping Mopping

c. Available equipment.

E. Method to use in preparing the schedule:

1. Make a job inventory; divide the tasks into various work units.
   a. Request each worker to list all activities performed during the day including length of time required for completion.
   b. Evaluate job inventory with the employee.
2. Assign each job to a definite person to be responsible for completion.
3. Each employee should be assigned to a specific unit, such as salad or bake units. In small schools each person may be assigned to several units.

4. Plan a reasonable time schedule during which the employee can be expected to complete the job.
5. State in each work schedule the duties involved in preparation, service, and clean up.

F. Types of work schedules

1. Individual.
    - a. Desirable when practical.
    - b. Recommended for new employees or when many changes are made in daily procedure.
    - c. See Individual Work Schedule (Samples No. 4 and No. 5).
2. Daily.
    - a. Recommended for many operations.
    - b. Usually applicable with limited number of employees.
    - c. See Daily Unit Work Schedule (Samples No. 6 and No. 7).
3. Organizational.
    - a. Usually used in large operations with specialized employees doing basically the same job daily.
    - b. Must be used with individual assignments made daily.
    - c. Cleaning schedules should also be designed by jobs to be performed in both large and small operations.
    - d. See Kitchen Cleaning Schedules (Samples No. 8 and No. 9).

INDIVIDUAL WORK SCHEDULE (Sample No. 4)

POST AT WORK STATION

POSITION: Main Dish Cook HOURS: ____________

RESPONSIBILITIES:

You are responsible for preparation of the main dish and the completion of all duties necessary in your department.

1. Sign in each day.
2. Read menu and work sheet. Study recipe ahead of time so you can be organized efficiently.
3. Gather supplies from storeroom, deep freeze, or refrigerator and take to work area. Use cart, portable table, or tray to gather supplies. This will save TIME, ENERGY, AND STEPS.
4. Prepare main dish item, such as meats, gravies, and sauces.
5. Place completed product in hot or cold storage for holding.
6. Look ahead, make barbeque sauce, tomato catsup, and steak coatings as needed. Grind bread crumbs.
7. Keep pots and pans washed as you work, also mixer, food slicer, and any other equipment used. Tools and equipment will then be ready for use by next person and time will not be wasted.
8. Keep your work area tidy and clean as you work.
9. You will have a 30 minute lunch period.
10. Your duties will vary during serving time. To be assigned by manager as need arises.
11. Store, label, and date leftovers. List and give to the manager for Menu Planning Book.
12. Do pre-preparation according to menu.
13. Keep assigned portion of refrigerator and freezer clean and neat at all times.
14. Use freezer, refrigerator, and storeroom check out sheets for each item taken out or returned. Keep up to date.
15. As time permits, help others.
16. Leave work area clean. Straighten drawers, clean shelves, tabletops, storage bins.
17. Sign out at the end of the day. Initial time sheet at end of week.

THESE ARE YOUR DIRECT RESPONSIBILITIES, **BUT**, YOU ARE TO HELP WHERE NEEDED. THERE ARE DAYS WHEN YOUR PREPARATION GIVES YOU TIME TO HELP OTHERS AND HELPING EACH OTHER MAKES THE DAY'S WORK EASIER TO COMPLETE. NO ONE IS THROUGH UNTIL ALL ARE FINISHED.

Signed ______________________________
Manager

INDIVIDUAL WORK SCHEDULE (Sample No. 5)

SCHEDULE FOR: ____________
HOURS: 8:00–1:00
SERVING TIME: 11:30–12:30
DATE: Monday, April 2
POSITION: Baker

MENU: HAMBURGERS ON BUN
TATER TOTS
LETTUCE AND TOMATO SALAD
FROSTED CAKE
MILK

TIME	PREPARATION	NUMBER TO PREPARE FOR	RECIPE	DIRECTIONS
8:00	Prepare cake	250	C-28	2½ times recipe
9:00	Clean area			
9:30	Coffee break			
9:40	Make frosting		C-26	2½ times recipe
10:15	Wash pots and pans			
10:30	Cut cake and frost			Portion cake 6 × 10
11:00				
11:20	Set up line with desserts			
11:30	Serve on line			
12:00	Serve on line			
12:20	Put fruit in refrigerator for tomorrow			4 cans fruit cocktail 3 cans sliced peaches 2 cans USDA pineapple tidbits
12:45	Clean milk cooler			

DAILY UNIT WORK SCHEDULE FOR 3 KITCHEN PERSONNEL (Sample No. 6)

(May be adjusted to fit individual situations)

MORNING DUTY		AFTERNOON DUTY
Employee I Main Dish	1. Prepare meat as instructed. 2. Make gravy or sauce, if on menu. 3. Wash pots and pans as emptied. 4. Keep work area clean. 5. Put counted trays on the line. 30 minute lunch period. Wash hands, freshen make-up, and change apron. Help fill the serving counter. Serve. Refill counter during breaks, meat and bread. Cook meats during break and watch bread.	1. Clean range and oven. 2. Clean work surfaces. 3. Wipe dining room tables and chairs. 4. Fill napkin and straw dispensers. 5. Do any needed preparation for the following day. 6. Sweep kitchen and store room. Weekly 1. Clean freezer. 2. Thoroughly clean oven. 3. Clean drawers. 4. Organize storeroom.
Employee II Vegetable and Salad	1. Do vegetable preparation as instructed. 2. Wash pots and pans as emptied. 3. Keep work area clean. 4. Clean tables in dining room. 5. Prepare salad, if on the menu. 6. Put out serving utensils needed and wet cloths under the counter. 7. Put out straws and napkins. 30 minute lunch period. Wash hands, freshen make-up, and change apron. Help fill the serving counter. Serve. Refill line with vegetables and salads during breaks.	1. Wash and store pans, clean sinks. 2. Clean can opener, counters, and milk box. 3. Organize walk-in refrigerator. 4. Uncrate, clean, wash, and put away all fresh fruits and vegetables received. 5. Do preparation on salad or vegetables for following day. 6. Clean water fountain. 7. Mop kitchen and storeroom. Weekly 1. Clean walk-in refrigerator. 2. Clean legs on all work tables. 3. Clean windows, vents and woodwork.
Employee III Bread and Dessert	1. Make bread, let rise, grease pans. 2. Prepare dessert of the day. 3. Pan and finish bread. 4. Prepare and store pan coating if needed. 5. Do preparation for the next day. 30 minute lunch period. Wash hands, freshen make-up, and change apron. Place dessert and bread on the serving line. Fill dishmachine. Serve. Go to dishmachine at end of serving periods. Refill line with trays and flatware, if needed during break.	1. Complete washing and storing trays and flatware. 2. Clean inside of dishmachine and allow to air dry. 3. Sweep and mop dishroom. 4. Wash trash cans. 5. Clean and sanitize restroom. Weekly 1. Run filters through dishmachine. 2. Clean trays throughly, removing any stains. 3. Delime dishmachine. 4. Clean carts and racks including legs and wheels.

DAILY UNIT WORK SCHEDULE FOR 4 PERSONNEL KITCHEN (Sample No. 7)

TIME	MANAGER 7½ HR.	6 HR. ASSISTANT	5 HR. ASSISTANT	4 HR. ASSISTANT
7:30– 8:00	Open kitchen, organize schedule and records			
8:00– 8:30	Mix preweighed ingredients for bread, let rise.	Prepare Main Dish		
8:30– 9:00	Lunch Count—Tickets		Punch down and pan bread	
9:00– 9:30	Help with Main Dish			
9:30–10:00		10 Min. Break	Wash vegetables for salad	
10:00–10:30	10 Min. Break Help cut up salads	Bake bread	10 Min. Break Cut up vegetables for salad	Dip up chilled fruit and refrigerate
10:30–10:45	Chefs Salad	Prepare bread crumbs for fried chicken tomorrow		Set up line—napkins, straws, dishes. Mix salad for first lunch
10:45–11:15	Lunch Period	Lunch Period	Lunch Period	Lunch Period
11:15–11:30	Put food on steam table	Put food on steam table	Put out desserts	Wash pots & pans
11:30–12:00	Back up line	Serving; set up for next line	Cashier	Serving
12:00–12:30	Back up line	Cashier	Serving; Set up for next line	Serving
12:30– 1:00	Back up line or serve	Cashier	Serving; Help in dishroom	Dishroom
1:00– 1:30	Count money Help clean tables	Put away food. Clean steam table	Help in dishroom	Dishroom
1:30– 2:00			Clean tables	Clean dishroom
2:00– 2:30	Take topping out of freezer and put in refrigerator for tomorrow	Help with kitchen cleanup		Help with kitchen cleanup
2:30–3:30	Prepare reports Place orders			

KITCHEN CLEANING SCHEDULE (Sample No. 8)

JOBS TO BE DONE	DAILY	WEEKLY	MONTHLY OR AS NEEDED TO KEEP CLEAN
Bake Tables	Clean thoroughly	Clean legs & inside drawers	
Can Opener	Wipe outside, scrub		
Dishwasher	Clean scrap trays, hose inside, wipe outside, remove & clean, wash & rinse arms & curtains, air	Delime, if necessary dry	
Drawers in all tables			Remove all objects and sanitize
Fans			Remove grease and dust
Floors	Mop	Scrub	
Filters		Wash	
Freezer	Straighten, wipe up spills	Mop floor, clean shelves	Wash shelves Defrost
Garbage Area	Hose & scrub		
Garbage Pails	Scrub inside & out		
Hood		Wipe clean	As needed to keep clean
Light Fixtures			As needed to keep clean
Loading Zone	Sweep & hose		
Milk Cooler	Wipe inside & out		
Mixer	Clean thoroughly		
Oven	Wipe inside & out	Clean thoroughly	Clean burner compartment of stack ovens
Pan Rack	Clean thoroughly	Clean casters, legs	
Range	Clean thoroughly		
Refrigerator	Wipe spills immediately, clean outside & top	Take everything out, wash thoroughly with soda water	Defrost
Refrigerator (walk-in)	Straighten & wipe up any spills	Mop floor, wash inside & out	Wash inside & outside Defrost
Restroom	Clean fixtures & floor		
Serving Counter	Clean thoroughly including sneeze guard		
Sink & Underneath Plumbing	Clean sink daily	Clean underneath plumbing	
Steamer	Clean compartments	Blow down boiler—more often if used constantly	Manually clean boiler
Steam Kettle	Wash inside & out		
Storeroom	Sweep floor and straighten shelves	Mop and straighten merchandise	Wash shelves
Tilting Braising Pan	Clean after each use		
Walls & Woodwork		Clean as needed	Wash as needed to keep clean
Windows		Clean as needed	Wash as needed
Work Tables	Wipe after each use	Clean all surfaces	

CLEANING SCHEDULE (Sample No. 9)

DAILY	WEEKLY	MONTHLY	SEMI-ANNUAL

List all cleaning jobs. Be specific.

Divide according to number of workers available, making the cleaning jobs as equal as possible.

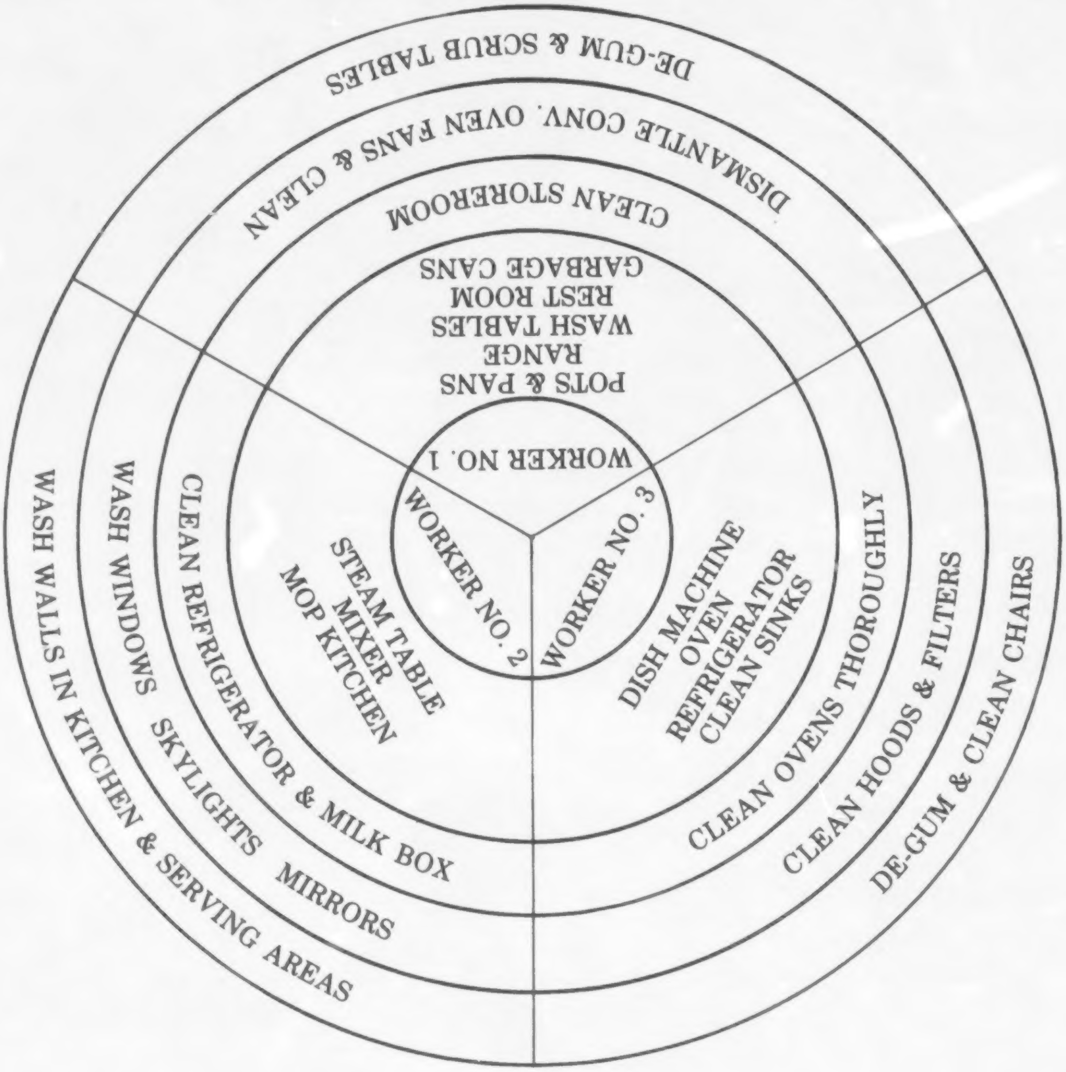
Place jobs to be done in the appropriate circle on the cleaning wheel, update as needed.

CLEANING SCHEDULE (Sample No. 9 continued)

Using poster board prepare two circles — one small and one large. Divide the small circle into equal sections and write in a worker's name or position in each section. Divide the large circle into the same number of equal sections. Draw on the large circle intermediate circles, marked off as follows:

Second circle ....daily cleaning
Third circle ....weekly cleaning
Fourth circle...monthly cleaning
Fifth circle...twice a year

Place the small circle over the large circle. Insert brad which will allow circle to rotate. Extend the dividing lines between the small circle and the large circle.



WORKER NO. 1
WORKER NO. 2
WORKER NO. 3
POTS & PANS
RANGE
WASH TABLES
REST ROOM
GARBAGE CANS
CLEAN STOREROOM
DISMANTLE CONV. OVEN FANS & CLEAN
DE-GUM & SCRUB TABLES
STEAM TABLE
MIXER
MOP KITCHEN
CLEAN REFRIGERATOR & MILK BOX
WASH WINDOWS SKYLIGHTS MIRRORS
WASH WALLS IN KITCHEN & SERVING AREAS
DISH MACHINE
OVEN
REFRIGERATOR
CLEAN SINKS
CLEAN OVENS THOROUGHLY
CLEAN HOODS & FILTERS
DE-GUM & CLEAN CHAIRS

If second circle (daily cleaning) is to be rotated daily, weekly jobs will be according to location of wheel on Friday. Monthly jobs will be according to location of the wheel on last work day of the month.

If second circle (daily cleaning) is to be rotated weekly, monthly jobs will be whatever task falls in that circle during the last week in the month. The same applies to semi-annual tasks.

V. EQUIPMENT MANAGEMENT

A. The cost of the equipment per unit produced should be as low as possible to cut the total cost of the operation. Stagger use to allow more than one production unit to use the same equipment.

B. To efficiently utilize equipment:

1. Plan the menu.
2. Refer to the recipe card and management experience for timing.
3. Make a schedule for the time needed for each piece of equipment for each menu item.
4. Correlate this with the personnel work schedule. Results give an equipment work schedule.

C. Organization of an equipment schedule.

Fill in the time each piece of equipment should be used for each item of the menu.

MENU #1	OVENS	STEAMER	KETTLE	RANGE	MIXER

VI. WORK SIMPLIFICATION

A. Aid to labor cost control:

1. Kitchen design.
2. Selection of equipment.
3. Increase productivity.

B. Getting the job done the easiest way:

1. Appeals to workers and supervisors.
2. Break the job down so that productive motions are separated from waste or rest motions.
3. Plan for rest motions.
4. Eliminate waste motions.
5. Combine and rearrange the productive motions so that the job is simplified and more easily accomplished.

C. Ensures:

1. Safer and better working conditions.
2. Reduces fatigue.

D. Use plain common sense:

1. Analyze work being done.

2. Originate ideas for improving the job.

E. Create an interest or desire in the worker:
   1. To make work easier.
   2. To be more productive.
   3. To improve work habits and standards.

F. Use organized techniques for taking a job apart and applying a new method.
   1. Select the job to be improved.
   2. Break down the job in detail.
      a. **Get ready:** effort and time spent to set up equipment, tools, and materials with which to work.
      b. **Do:** actual work accomplished.
      c. **Put away:** clean up and store.
   3. Question the job and each detail of the job.
      a. Purpose of the job.
      b. Steps required in getting the job done.
      c. Reason for each step.
      d. Time or sequence of steps.
      e. Person assigned to the job; skilled or unskilled.
      f. Alternate method and its value.
      g. Consider possible changes in layout, equipment, or tools to make the job easier.

G. Techniques and form used depend on the job.
   1. Some relatively simple jobs do not require detailed study.
   2. Jobs having few but highly repetitious motions may have to be studied in minute detail.

VII. PRINCIPLES OF MOTION ECONOMY

A. Work is easier and quicker to do if:
   1. Both hands are used together.
      a. Begin and complete work motions at same time.
      b. In smooth, continuous motions rather than zig-zag or straight-line motions involving sudden and sharp changes in direction.
   2. Gravity or drop delivery is used to deliver materials closest to the point of use.
   3. Locate all tools and materials and equipment in a definite, fixed place, close to and directly in front of the worker in a circular work area.

B. Work centers have multiple use.
   1. A variety of menu items may be prepared with the same equipment.
   2. Each cook may prepare various dishes for one meal.
   3. Organize jobs in each area:
      a. Use mobile equipment where possible.
      b. Store food and supplies at point of use or shortest distance between point of storage and point of use.
      c. Supply **each** station with complete set of small tools for jobs being done there.
      d. Eliminate unnecessary steps.

C. Consider the individuals involved.
   1. Prevent fatigue and plan for needed rest periods.
   2. Incorporate new ways of doing jobs only if the new way is more acceptable to the employee and/or is easier, safer, and more sanitary.
   3. Include employee when considering a change in operation.

D. Encourage employees to:

  1. Plan work.
  2. Think of ways to simplify jobs.

E. Techniques of economizing time and motion.

  1. Always work with both hands. Example: When panning rolls, use both hands to place rolls on pan.
  2. Arrange sequence of work so there is no break in movement or wasted motion.
  3. Take advantage of drop delivery whenever possible. Example: Roll bowl on dolly to the side and below cutting table surface to chop vegetables for salad so that, with a simple scraping motion, they may be pushed over the edge to drop into the bowl.
  4. Correct working height of work tables is important to reduce fatigue and permit an even flow of work.
     a. A small work area may be raised by placing a chopping board across a 12″ × 20″ pan.
     b. The depth of the pan selected will determine the height of the work surface.
  5. Provisions should be made for adequate light.
  6. Definite and fixed work areas should be provided for each activity.
  7. Tools and food ingredients should be located near the work area and as close to the point of use as possible.
  8. Use equipment on wheels to save time and labor, such as:
     a. Tables on wheels that can be moved to convenient spots.
     b. Shelved carts for carrying dishes and pans of food.
     c. Covered disposal cans.
     d. Covered storage cans on dollies.
  9. Think through each job before work is done.
     a. Food and equipment needed to get the job done.
     b. Method required to get materials together.
     c. Mode of transporting materials and supplies.
  10. Handles and hand tools should be so designed that as much of the handle is in contact with the hand as possible.
  11. Select the appropriate tool.
  12. Use scales to weigh whenever possible instead of measuring.
  13. Keep equipment in good operating condition.
  14. Develop new and better ways of doing each job whenever possible.
  15. Combine operations and eliminate all unnecessary parts of job, such as add dry milk to dry ingredients, one-bowl method for cakes, etc.

VIII. TIME AND WORK SHORTCUTS

A. General suggestions

  1. Basic techniques to all operations:
     a. Organize work and follow plans made.
     b. Collect all equipment and materials before beginning to work.
     c. Keep working area clean and free from clutter.
  2. Save time, energy, and/or utensils by using the correct kitchen tools for the job to be done.
     a. Weigh all ingredients of a recipe to assure accurate measurements.
     b. Where scales are not available, use only calibrated metal measuring cups and/or spoons for measuring.
     c. When recipe calls for 4 cups, use the quart measure rather than 1 cup 4 times, etc.
     d. Measure dry ingredients first; then use same measure for fat or liquids.

   e. Measure fat before molasses, syrup, or honey; and they will not stick.
   f. Use a French whip to smooth gravies, puddings, and sauces.
   g. Use a rubber scraper to remove food from containers, batter from pans, or when transferring mixtures to baking or serving pans.
   h. Use a pastry bag for stuffing deviled eggs, weiners, potatoes, and for decorating salads.
   i. Use a pastry cutter or French knife for chopping bananas.
   j. Use a wide pastry brush for greasing pans, not a narrow one.
   k. Use the food chopper attachment to cut such foods as nuts, raisins, and vegetables.
   l. Use a portion scoop for filling muffin tins, measuring sandwich fillings, serving mashed potatoes, salads, casserole dishes, etc.
   m. Wash in a dishwasher all non-electrical equipment and parts of equipment small enough to fit.
   n. When feasible, prepare food in the serving pan.

3. Fasten a plastic bag over the mouth of a shredder to receive shredded vegetables.
4. Use aluminum foil for a tight-fitting lid on pans of food cooked in the oven.
5. Attach, with tape, a large paper sack to the end of the work table for holding scraps and waste.
6. When dicing vegetables, fruits, or meats, place the point of a French knife on a board and push food under the blade. Chop with an up and down motion, swinging large end of knife in a semicircle.
7. Make quick work of washing potatoes, apples, oranges, etc., by using a scrubber or running through dishwasher.
8. A little butter run through the meat grinder before grinding onions, meat, cheese, nuts or raisins makes cleaning easier.
9. After using electric grinder attachment, put several slices of bread through the grinder to aid in cleaning out fat and grease.
10. A pair of scissors in the kitchen comes in handy for cutting such foods as marshmallows or meat and vegetables for salads. Dip scissors in water and marshmallows will not stick to them.
11. To prevent cream sauce from curdling, do not add salt until the very last.
12. To brown flour for gravy, place on bun pan in 425° F. oven, for 15 minutes.
13. Select the knife specially designed for the job to be done.

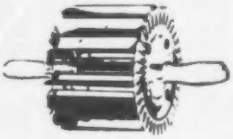
   a. Use a French knife and a cutting board when slicing or chopping foods by hand.
   b. Use a slicing knife to slice meat.
   c. Utility knives may be used for coring vegetables, peeling, etc.
   d. Always use cutting board or a work surface for chopping, peeling, and cutting food. Never cut against the thumb.
   e. The only knife that is dangerous is one that is not kept sharp or properly stored.
   f. For additional information, see School Food Service Facility Planning and Equipping, Section IX in this handbook.

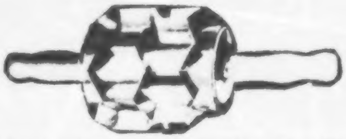
14. Pull hot pans from the oven with a pan pull.
15. Use clean mop on handle to clean hood over range.
16. Correct working height of cook's table reduces fatigue and permits an even flow of work.
17. Pre-soak dishes containing starch, sugar, cheese, eggs, etc. in cold water.
18. Soak greasy dishes in hot, soapy water. This saves time in cleaning and also saves changing dishwater.
19. Have pot sink ready with soapy water and wash utensils as used.
20. A safe, easy way to gather up small pieces of broken glass is to pat them up with a dampened paper towel.
21. To open sugar or flour sacks, stand the sack perpendicular to you with the double stitching on your right. Cut end of string nearest you close to the sack. Pick first stitch or two carefully; and the rest will unravel easily.
22. Maintain a file of standardized recipes adjusted to the number of portions and the equipment that meets the needs of the school food service program.

23. Assemble all supplies for the job to be done before you begin to work. Use a tray or mobile cart for bringing supplies from the refrigerator and supply room.
24. Use gloves or tongs for serving bread slices, rolls, cookies, or weiners. Use salad or spaghetti tongs for serving cooked greens, tossed salads, etc.
25. Soften hardened brown sugar by keeping in refrigerator for a day or so, or add slice of apple to provide additional moisture (remove apple slice before it begins to mold.)
26. Use a dry vegetable brush for removing cheese and lemon or orange rind from hand grater before washing.
27. Butter the sides and bottom of the pan or add salad oil to water in which noodles, spaghetti, rice, or apples are cooked to prevent them from boiling over and sticking to the pan.
28. An egg slicer may be used to cut cooked carrots, potatoes, hard-cooked eggs, bananas, and other soft foods.

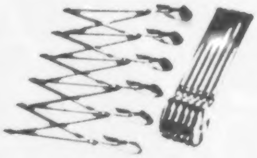
B. Baking suggestions.

1. Prepare in advance dry mixes for puddings, muffins, cakes, pastries, biscuits, etc. Mixes will then be ready for final steps of preparation.
2. Blend two parts of shortening and one part flour for coating cake pans. Keep at room temperature; do not allow to melt. Spread a heavy layer of the mixture on the bottom of each pan with a pastry brush.
3. Weigh or measure batter into pans to assure even volume.
4. Cutting biscuits in squares is faster than using a biscuit cutter and saves reworking and rolling dough. Transfer several at a time to baking pan using long wide spatula.
5. Roll out biscuit or yeast dough in bun pan and cut in squares or diamond shapes with dough cutter. This saves reworking and rolling dough scraps left over when biscuit cutter is used.





6. A ball-bearing bun cutter is a convenient tool for cutting a large quantity of rolled dough with greater speed and uniformity. It also saves reworking and rolling dough scraps.
7. Shape yeast dough into a long roll and cut off portions with a dough cutter or shape into two long rolls; place parallel, close together; and using a French knife, with one motion, cut a portion from each roll at the same time.
8. Drop biscuits and drop cookies are time savers.
9. To make bread crumbs:
   - a. Put dry bread in plastic or paper bags and roll with rolling pin.
   - b. Run dry bread through food chopper or grater.
10. Freeze dinner rolls on flat surface then store in plastic bags to save freezer space. Leftover sweet rolls, cake crumbs, etc. make good crumb cake or wonder pudding.
11. Cut cakes before frosting.
12. Cover cobbler lengthwise with five, three and one half inch pastry strips. After baking it will only be necessary to cut crosswise to portion.
13. Portion muffin mixture into muffin tins with #20 disher.
14. An adjustable portion cutter is a convenient tool for portioning items such as pastry strips, cakes, jello, pizza, etc.



263

C. Cheese.

1. Use grater attachment on the mixer for grating cheese. Look ahead to menus, grate or cube weekly supply and store in the refrigerator in plastic bags for use when needed. Label the amount of cheese in each bag.
2. Dip a loaf of cheese in hot water for easy removal of the wrapper.
3. For easy separation of slices of cheese or meat, alternate corners when stacking the slices.
4. A vertical cutter mixer is a convenient tool to crumble cheese for recipes such as lasagna, pizza, or tacos.

D. Eggs.

1. After fresh shell eggs are cooked to the hard stage, cover with cold water. Eggs treated in this manner will peel quickly and easily.
2. Cream of tartar added to beaten egg whites helps create a better and more stable foam. The eggs should be at room temperature.

E. Fruits.

1. Fruits (grapefruit, oranges, and melons) can be "skid-proofed" by cutting a slice off the bottom.
2. When preparing sections of oranges or grapefruit:
    a. Cover fruits with boiling water.
    b. Allow to stand five minutes.
    c. Score through skin lengthwise with a sharp knife.
    d. Pull off rind. White membrane should readily pull off along with the rind.
3. Dampen raisins with water, and they will go through the food chopper without sticking or use one tablespoon of melted butter to one pound raisins.
4. Easy-to-eat orange slices:
    a. Cut washed oranges in half lengthwise from stem to blossom end.
    b. Place cut side of orange half on board.
    c. Slice crosswise several times but do not separate slices.
    d. Serve orange half intact by lifting with wide spatula.

F. Gelatin.

1. Heat only enough liquid to dissolve the gelatin and sugar.
    a. Add remaining liquid.
    b. To hasten congealing use ice water.
2. Coat containers with cooking oil for easy removal of gelatin desserts.

G. Meat.

1. Use calibrated scoop for portioning hamburger patties and placing in baking pan. Flatten patties with bottom of can dipped in cold water. Use both hands, a can in each one.
2. Spread ground meat evenly over entire surface of shallow pan. Flatten with rolling pin and wax paper. Cut into square portions, bake, and drain.
3. Place meat patties in rows three layers deep in a baking pan. Separate layers with strips of aluminum foil just wide enough to cover individual rows of patties.
4. When chopped bacon is needed cut several pieces of uncooked bacon at the same time with scissors or chop with a French knife. Bacon will brown evenly in a bun pan in the oven without turning.
5. Cut meat loaf into individual portions before baking. Slices separate easily when cooked. Or eliminate slicing by panning with an appropriate size scoop, placing level scoopfuls one-half inch apart on baking sheet.
6. Save money and time; "oven fry" chicken, fish, croquettes, etc. This requires less fat and less watching.

7. When preparing sandwiches to meet meat/meat alternate requirements:
    a. Place bread on a tray or wax paper.
    b. Use a calibrated scoop of filling on each slice of bread.
    c. Spread with a one-inch spatula.
    d. Place two pieces of bread on top of the spread and repeat.
8. Large cuts of meat are easier to slice if left at room temperature for 15 minutes after removal from the heat.

H. Milk.

1. When heating milk in a steam-jacketed kettle, coat the inside with butter. This will prevent milk deposits which scorch and will make the cleaning operation easier.
2. Do not reconstitute non-fat milk if it is to be used for cooking or baking where texture of baking is unimportant, such as cornbread.
    a. Combine with flour and other dry ingredients.
    b. Add liquid equivalent to the total liquid required in the recipe.

I. Vegetables.

1. Use vegetable brush for cleaning vegetables.
2. Whenever possible, scrub or scrape vegetables instead of peeling them. Example: Fresh, young carrots for strips need only scrubbing.
3. Do not cut anything in the hand; cut on a chopping board or with a vegetable cutter.
4. Large cutting boards and French knives save time in chopping foods.
5. Take advantage of drop delivery. Place a container on a chair or stool at the end of the work table so that food may be pushed rather than lifted as it is chopped.
6. Clean and chop celery and store for future use. Celery may be frozen if it is to be cooked before using. Example: Dressing or stew.
7. To make celery rings or crescents, cut an entire bunch at one time with a French knife. Then sweep it all into a colander and wash under a strong stream of water.
8. To remove skins from tomatoes, dip into boiling water until the skin will split and slip. Cool immediately in cold water. Remove skins and place in refrigerator.
9. Hold onions under lukewarm water when cleaning and cutting—or cut unpeeled onions in quarters from top to bottom and remove skin from quarters by pulling skin out and down.
10. When cleaning spinach, break off all stems from the leaves before washing. Wash in warm salted water, using two pans.
11. Remove core of lettuce by twisting (do not cut). Then let water run through core hole into lettuce to loosen and separate leaves.
12. Rub hands with a little fat before preparing squash and other fuzzy vegetables. This prevents roughness and irritation to hands.
13. Use slicer attachment on mixer for raw potatoes, carrots, etc.
14. Use grater attachment on mixer for grating carrots or cabbage.
15. Cook potatoes in their jackets to save food value and prevent waste in peeling. Boiled potatoes peel faster by hand than uncooked potatoes.
16. Add dry milk powder to potatoes that are to be mashed instead of reconstituting milk first; use potato water in place of water.
17. Cut carrots after they have been cooked.

SECTION IX
SCHOOL FOOD SERVICE FACILITY PLANNING AND EQUIPPING

Page

I. Planning an Efficient School Food Service Facility 279
II. General Construction Features for an Efficient School Food Service Facility Requires Careful Planning 280
III. School Food Service Equipment Needs 284
IV. Installation and Use of Large Equipment 285
V. Use and Care of Equipment 286
VI. Dishmachines 294
VII. Reach-In Refrigerators 296
VIII. Walk-In Refrigerator and Freezer 297
IX. Mobile Equipment 298
X. Hot or Cold Food Cabinets 301
XI. Food Serving Counter 301
XII. Sneeze Guards 302
XIII. Milk Cooler 302
XIV. Small Equipment 303
XV. Guidelines for Area and Basic Equipment Requirements 306
    Basic Requirements for Equipping Typical School Food Service Programs (Chart No. 1) 307
XVI. Planning an Efficient School Food Service Facility 312
XVII. Inspection and/or Checklist for Conservation 316

SCHOOL FOOD SERVICE FACILITY PLANNING AND EQUIPPING

I. PLANNING AN EFFICIENT SCHOOL FOOD SERVICE FACILITY

A. Adequate facilities are essential to a successful school food service operation.
B. Facilities are long range costly projects.

  1. Meeting specific needs at a cost that can be afforded requires the cooperative efforts of all concerned.
  2. Facility planning draws from the experience and training of:

    a. Administrators.
    b. School board.
    c. Lunchroom supervisor.
    d. Architect.
    e. State School Lunch Office.

C. Keeping in mind the basic objectives of the School Food Service Program; efficient facilities can be assured by:

  1. Obtaining the latest and most authoritative guidance and information available.
  2. Keeping in mind the basic needs of individual school situations and what services the facility must provide.
  3. Consulting the State School Lunch Director's office to obtain latest information of successful operations.
  4. Consulting the state or local health department regarding sanitation regulations applicable to food service.
  5. Visiting new and well-planned school cafeterias as recognized by the state office.
  6. Comparing notes with other administrators and school food service personnel; ask what they would do differently and what mistakes should be avoided.
  7. Planning for growth if the potential exists.
  8. Including the school food service manager or supervisor in planning to gain the value of training and experience as well as improving morale.
  9. Studying all available suggestions for conserving energy.
  10. Remembering: NO DETAIL IS TOO SMALL TO INCLUDE IN THE PLAN.

D. A well planned and operated facility will result in:

  1. Maximum efficiency.
  2. Quality food.
  3. Lower labor and maintenance costs.
  4. An environment conducive to good working conditions and one which creates a pleasant mealtime for customers of the school food service program.

E. The different types of food service systems include:

  1. Centralized food preparation system.

    a. Meals for all schools within a system are prepared in one central kitchen.
    b. The meals are transported to the schools and are served from serving areas or serving kitchens.
    c. Serving kitchens are usually staffed with part-time help and may or may not have dishwashing facilities.

  2. Satellite food preparation system.

    a. Involves a number of serving kitchens.
    b. The number of main production kitchens is decided by the size of the district.
    c. A production kitchen is located in a school building where meals are prepared and served to students in that school.

   d. Meals are transported to other schools located in the vicinity of the production school and served from serving areas or kitchens, usually with part-time help.

3. Individual unit preparation system: Meals are prepared only for the students in the individual, self-contained school. Unless circumstances dictate the need to use one of the other types of facilities, the school lunch section in this state recommends the individual unit preparation system.

II. GENERAL CONSTRUCTION FEATURES FOR AN EFFICIENT SCHOOL FOOD SERVICE FACILITY REQUIRE CAREFUL PLANNING

A. Walls: Smooth, impervious to moisture: easy to wash and keep in good repair; vermin proof; metal corner guards; and light colors.
B. Ceiling: Smooth, impervious to moisture, easy to clean, rodent-proof, and fire-resistant.
C. Flooring

   1. Non-resilient: such as ceramic, terrazzo or quarry tile.
   2. Slip-resistant: treated concrete.
   3. Must be constructed so vermin or rodents cannot enter.
   4. Floor drains located near steamers and kettles.

D. Doors and windows

   1. Outside Doors: Self-closing devices and locks.
   2. Inside Doors: Lock and sound absorbing effect.
   3. Metal door frames.
   4. Walk-in freezers and refrigerators: must have locks that can be opened from the inside.
   5. Screens: Plan for screens on all doors and windows.
   6. Windows.

      a. High enough that they will not obstruct equipment placement.
      b. Be located for cross-ventilation.
      c. Louvers, rather than windows, are recommended for the storeroom.

   7. All openings should be planned to make maximum use of available energy with conservation techniques observed.

E. Lighting, temperature control, and ventilation.

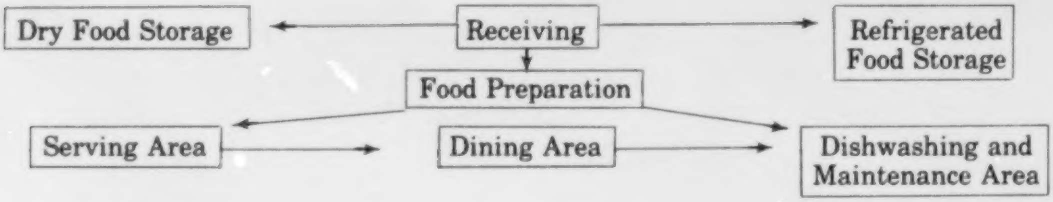
   1. Separate ventilation system from rest of school.
   2. Provide free circulation of air at workers' level at all work areas.
   3. Arrange food storage to have outside ventilation; eliminating sunlight.
   4. Separate temperature control for heating and cooling.
   5. Plan lighting and wiring to comply with National Electric Code and local requirements.
   6. Provide special wiring and outlets for heavy equipment and spare circuits for future needs.

F. Kitchen layouts.

   1. The pattern of the entire building will determine the general location of the kitchen and lunchroom facility.

      a. It is important to study the functionality of the general layout of a kitchen facility before construction.
      b. Plan facility arrangement for efficiency of operation with emphasis on principles of motion economy.
      c. General work areas should be arranged to allow the overall flow of work in a straight line; the flow of material being processed should be continuous or direct in progress.
      d. An effective planning tool is an outline of the floor plan with movable templates representing equipment. These can be moved about until a satisfactory arrangement is found.

2. The following diagram illustrates the interrelationship of areas within the school lunch facility.



3. Efficient arrangement and adequate selection of institutional equipment in the school food service kitchen is of major importance. Use mobile equipment wherever possible. Depending on the size of operation, the following basic equipment needs are suggested.

   a. Main dish preparation area:

      (1) Cook's table with overhead utensil rack.
      (2) Range, commercial type.
      (3) Oven for baking and roasting.
      (4) Compartment steamer, steam-jacketed kettle, tilting braising pan (desirable).
      (5) Mixer, heavy-duty.
      (6) Additional cooking equipment, as needed.
      (7) Access to refrigeration and freezer space.
      (8) Access to water and three-vat, stainless steel pot sink.

   b. Baking area:

      (1) Baker's table with elevated shelf.
      (2) Bake ovens.
      (3) Mixer, heavy-duty.
      (4) Cooling rack.
      (5) Proofing cabinet; holding cabinets which may also be utilized as a proofer are preferable.
      (6) Storage bins (mobile).
      (7) Baker's scales.
      (8) Baking pans, measuring utensils, and other small equipment.
      (9) Access to refrigeration and freezer space.
      (10) Access to water and three-vat, stainless steel pot sink.

   c. Vegetable and salad preparation area:

      (1) Work table.
      (2) Vegetable sink, stainless steel (garbage disposal desirable).
      (3) Salad making mixer attachments.
      (4) Refrigeration (or access to).
      (5) Mobile cart or table.
      (6) Additional equipment as needed.

   d. Serving area:

      (1) Tray cart.
      (2) Flatware dispenser.
      (3) Heated serving counter(s).
      (4) Sneeze bar.
      (5) Milk refrigerator.

   e. Dish return area: Compartment unit consisting of:

      (1) Table for soiled dishes.
      (2) Garbage disposal (desirable).

(3) Dishmachine or stainless steel, four-vat sink with adequate drainboard space.
(4) Clean dish table (mobile) or carts.

G. Basic space allocations.

1. Receiving:

   a. Outside loading: Unloading dock at same level as receiving and storage areas (desirable to be covered by a roof).
   b. Inside receiving: Could be considered in large kitchen.

2. Maintenance:

   a. Mechanical room: 40–50 square feet for hot water equipment. This should be a separate room. A water softener, on hot water line to dishmachine and steamer, where water is extremely hard, will lengthen the life of equipment.
   b. Trash and garbage room: Area should be 30–50 square feet with floor drain and hot water for washing cans. Can washers in large schools are convenient and functional.
   c. Mop room: A room 20–30 square feet for a mop sink with hot and cold water is convenient if space is available; otherwise, it can be combined with the garbage room. Adequate ventilation for drying is necessary.

3. Storage: General food storage should average between .8 and 1.5 square feet per meal load.

   a. Dry food storage: ½ square foot per meal load. This amount of space is maximum. Slightly less may be acceptable if large amount of frozen food is used.
   b. Refrigerated storage: Approximately ¼ to ⅓ cubic foot per meal served. It is not practical to buy less than a 60 cubic foot refrigerator; 6 feet × 30 inches floor space. One section of refrigerator with pan files is recommended. A hot and cold pass-through box between kitchen and serving area is convenient as well as functional. When more than 66 cubic feet of refrigeration is needed, consideration should be given to providing a walk-in at floor level.
   c. Freezer storage: Amount of frozen food used, frequency of delivery, and size of school determine amount of freezer space needed. A walk-in is desirable for an economical operation. This should be floor level.
   d. Milk refrigeration: Is necessary in addition to other refrigeration; preferably in the serving line. Approximately 1 cubic foot for 50 to 75 half pints, depending on size and shape of containers.

NOTE: The floor of all storage areas; dry, walk-in refrigerator and freezer, should be flush with the outside floor to permit easy movement of mobile equipment.

4. Food preparation:

   a. Square footage (approximate)

      (1) Up to 200 meals—2 to 2½ square feet per meal
      (2) 350 to 750 meals—1½ square feet per meal
      (3) 750 meals up—1 square foot per meal

   b. General recommendation for kitchen space is 1.4—2.5 per square foot.
   c. Rectangular kitchen provides more efficient use of space.

5. Food service:

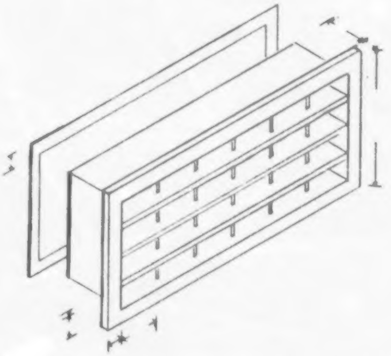
   a. Space needed is determined by the number of serving lines.
   b. Number of serving lines is determined by the number of:

      (1) Students.
      (2) Length of lunch period.
      (3) Schedule for releasing students.

   c. One to one and one-half square feet per meal served is recommended.

6. Dining: Area needed depends on number to be seated at one time. Usually should be planned for 1/3 of daily participation, which would mean that each chair would be used three times. An average of 10 to 12 square feet per person seated at one time is recommended.
7. Dishwashing: 180 square foot minimum from 200 to 750 meals; 180 to 250 square feet from 750 meals up.
8. Office Space: Every school food service facility should have at least a desk, a chair, and a file drawer.
9. Restroom: A minimum locker and toilet area of 30 to 50 square feet.
10. Hand washing facility: Located in kitchen in addition to restroom facility.
11. Aisle space should be a minimum of 48 inches up to 60 inches where workers pass.

H. Tray Return Window:



1. Stainless steel tray return windows are usually made to specifications and are welded to a stainless steel dishmachine soil table on the back side.
   a. The window shown is approximately 7 feet by 30 inches (inside measurement).
   b. The casing is 3 inches wide, the shelving ¾ inch thick.
   c. The rods are ⅓ inch in diameter and the front and back rows are set back 1½ inches from the edge.
   d. The spaces are 11½ inches wide by 5½ inches high by 16 inches deep.
   e. All joints should be welded to prevent food soil from collecting.
   f. The tray return windows in the elementary schools are placed closer to the floor and may have fewer shelves.
2. The divisions made by the steel rods and shelving prevents tray stacking, promotes tidiness and eliminates confusion back of the window. Such windows add much to the attractiveness of the dining room.

I. Mistakes frequently made in facility planning.

1. Too small! (Costly to correct later!)
   a. Storeroom.
   b. Kitchen area.
   c. Freezer and walk-in space.
   d. Serving counter.
   e. Dining area.
2. Inadequate or too much equipment, poorly arranged! (Costly to correct!)
3. General construction features, poorly planned! (Costly to correct!)
   a. Gas, electric, and plumbing installation; inadequate for present and future needs.
   b. Ventilation and lighting inadequate; little attention given to sources and availability of energy requirements.
4. Wrong flooring used! (Costly to maintain and replace!)
5. High labor cost related to one or more of the above mistakes! (This error increases in cost each year as labor cost increases.)

J. Initial planning is most important.
   1. Prevents costly mistakes.
   2. Promotes greater productivity by personnel through:
      a. Efficient arrangement of equipment.
      b. Selection of equipment that fulfills the needs of the program.

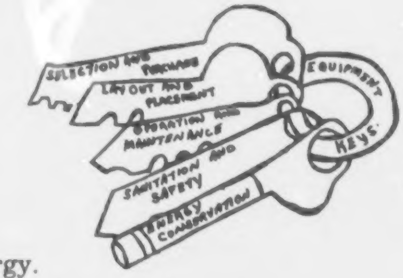
III. SCHOOL FOOD SERVICE EQUIPMENT NEEDS

A. Adequate equipment is essential.
   1. A well-planned school kitchen which contains adequate equipment is essential if the school food service program is to be operated at maximum efficiency with high production standards.
   2. It is a common error for school kitchens to be either over-equipped or under-equipped when the school follows some other school's plan without selecting specific equipment based on specific needs.
   3. Observation of other school's facilities provides valuable information, but the greatest efficiency results when each piece of equipment is evaluated and selected according to the contribution it will make to production with a minimum of labor cost and the highest level of energy conservation.

B. Small equipment: Although the amount spent for individual items may appear negligible, the large quantity required makes an impressive total.
   1. Small equipment and tableware may claim 20% to 30% of the budget for equipment.
   2. Careful selection is significant to work efficiency, initial cost, and operation expense.

C. Plan for maximum use of equipment: Make the best possible use of each piece of equipment in the school kitchen.
   1. Schedule the use of all equipment.
   2. Plan menus that make frequent use of each piece of equipment.
   3. Make maximum use of all equipment to help justify the initial expenditure. This may help justify the need for new equipment.

D. Consideration for equipment selection.
   1. Greatest dollar value.
   2. Placement of equipment.
   3. Maintenance of equipment.
   4. Sanitation and safety features.
   5. Conservation of energy features.



E. Energy conservation is essential.
   1. Clean equipment improves efficiency and saves energy.
   2. Check equipment periodically.
   3. Turn out lights in walk-ins, restrooms, storerooms, and dining room when not in use.
   4. Turn off cooking and heating units when they are not needed.
   5. Cook food closer to serving time to eliminate use of energy to keep food hot and to preserve nutritive value.
   6. Never use surface unit or oven to heat kitchen.
   7. Replace washers on all leaky faucets.
   8. Use natural lighting when possible.
   9. Keep outside and storeroom doors closed.

F. Check all transport equipment for efficiency and performance.
   1. If food is transported, review delivery routes.
   2. Evaluate and develop an efficient system combining deliveries and eliminate duplication.

3. Schedule equipment so that it is used in sequence. Do not allow equipment to stand idle while hot. Turn it off when not in use.
4. Be sure temperature gauges on ovens and ranges record accurately and use gauges to assure proper temperature settings for specific items.
5. Check and maintain gaskets on refrigeration units and ranges.

IV. INSTALLATION AND USE OF LARGE EQUIPMENT

A. Instruction manual and maintenance records.

1. Correct installation of equipment is very important for efficient operation and prolonged life of equipment.
2. Detailed instructions on use and care should accompany each piece of new equipment.
    - a. Keep a file on each piece of equipment.
    - b. If instructions have been lost:
        - (1) Write to the manufacturer for new instructions.
        - (2) Provide the name, model, serial number, and any other identifying information to enable the company to send replacement instructions.
3. Keep records on the purchase, repairs, etc., on an equipment card. See sample below.

EQUIPMENT RECORD CARD (front)

ITEM ______________________ COST ______________________
TRADE NAME __________ MOTOR NO. ______ MODEL NO. ______ SERIAL NO. ______
MANUFACTURER ______________________________________
NAME ______________________ ADDRESS ______________________
SALES COMPANY ______________________ ADDRESS ______________________
SALESMAN ______________________ ADDRESS ______________________
DATE OF PURCHASE ______________________ DATE OF INSTALLATION ______________________
WARRANTY PERIOD ______________________ FREE SERVICE PERIOD ______________________
NEW ______________________ USED ______________________

EQUIPMENT RECORD CARD (back)

	REPAIRS			REPAIRS	
DATE	PARTS	COST	DATE	PARTS	COST

B. Employee training

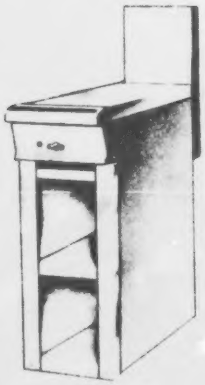
1. The representative of the supplier should be responsible for giving the initial instruction to the:
    - a. Supervisor.

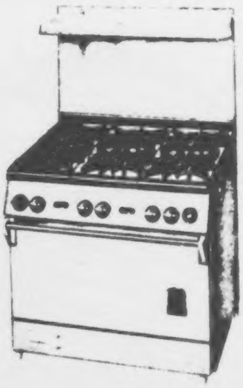
    - b. Manager.
    - c. Workers who are to use the equipment.
2. Post written instructions:
    - a. Near the machines for workers' use and frequent reference.
    - b. A clear plastic cover over the instructions prolongs their usefulness.
3. Teach workers to report immediately when equipment is not working correctly.
    - a. Before calling a reliable service repairman for repairs, check:
        - (1) Plugs.
        - (2) Switch boxes.
        - (3) Fuses.
    - b. If local repair services are not available, check with the company from whom the equipment was purchased.
4. On-the-job training is important. Strive for:
    - a. Trained workers.
    - b. Adequate supervision.
    - c. Cleanliness.
    - d. Systematic care.

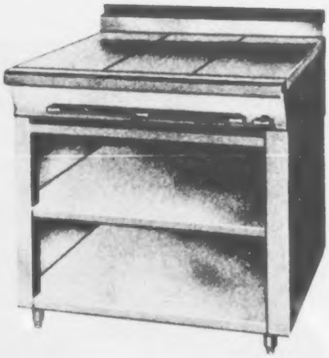
V. USE AND CARE OF EQUIPMENT

A. Range.

1. General instructions for operating a gas range top:
    - a. With gas ranges that are equipped with pilot light valves, turn on burner valve gently. For ranges without pilot lights, light match before turning on burner valve.
    - b. Heat only the part of range top to be used. Use high flame for boiling; when mixture reaches boiling point, turn flame to low for simmering. Turn burners off when not in use.
    - c. When using solid top, arrange pots to cover as much of the heated surface as possible. When using open burners, pots should cover entire unit to make best use of fuel and to cook evenly.
2. Cleaning instructions:
    - a. Clean surface with wire brush and/or scraper. Wipe with cloth dampened with hot detergent solution. Use cleaning powder if necessary. Rinse and dry.
    - b. If applicable, remove drip trays and scrub with hot detergent solution. Rinse and dry.
    - c. For weekly cleaning, remove burner and all removable parts. Soak in hot detergent solution. Scrub with wire brush. Clean clogged burner holes with stiff wire. Rinse and dry.





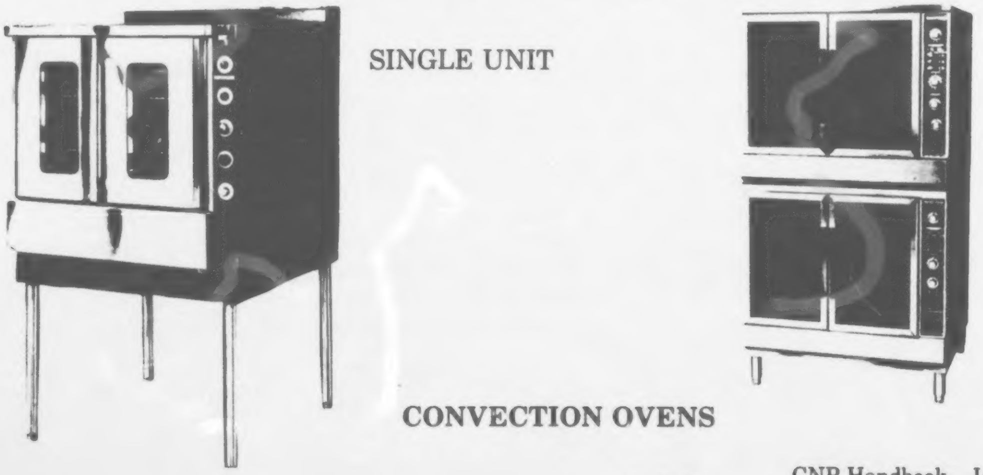


3. Safety precautions:
    a. Provide good lighting over the range.
    b. Adequate ventilation is required. (Clean hoods, filters, and exhaust fans are important.)
    c. Keep a fire extinguisher near the range (NEVER BEHIND THE RANGE).
    d. Let range cool before cleaning.
    e. Never allow grease to accumulate in cracks or on drip trays.
    f. Avoid spillage on range; this clogs burners and allows gas to escape.
    g. If burners or pilots go out due to strong draft or spilled liquid, turn off gas and wait several minutes before relighting.
    h. Use dry pot holders.
    i. Have the range inspected regularly; NEVER NEGLECT A GAS ODOR, SMOKING CORD, OR FLYING SPARKS.

4. Energy conservation:
    a. When using the top of the range, be sure the variations in settings are understood. Arrange pots and pans to use heat most efficiently.
    b. Turn down open burners as soon as contents of pot begin to boil. Water boils at 212° F. The temperature cannot be raised by turning the flame higher. Set all electrically controlled gauges at proper temperature.
    c. Turn off burners and ovens when they are not in use.
    d. Shut off gas pilot lights during vacation time. Unplug all unused electrical appliances.
    e. Turn knobs, handles, and thermostats gently; keep them lubricated and adjusted to work easily without sticking.
    f. Keep lids on. For steam-jacketed kettles and range-top pots, use the lids provided to significantly reduce energy for cooking.
    g. Pots with dull finishes absorb heat better than pots with shiny finishes. Therefore, foods cook faster in them.
    h. If an even-heat range top is used, the range works most effectively and efficiently when the top is covered with pans. Preheat only minimum amount of time prior to use.
    i. Open the oven only when necessary.

B. Convection ovens:

1. Operating instructions—Follow manufacturer's directions and general procedures.
    a. Turn burner valve to "on" position.
    b. Dial temperature desired on thermostat.
    c. Turn fan on (if not automatic).
    d. Preheat only as necessary.
    e. Place food in oven. Make sure pans do not touch each other or the oven walls.



SINGLE UNIT

DOUBLE UNIT

CONVECTION OVENS

f. Cook with the fan on AT ALL TIMES!
g. Set timer for cooking period.
h. Use oven light only to check product.
i. Vent according to local and state safety requirements.
j. When using conventional oven recipes, lower temperature and reduce cooking time in the convection oven.

2. Cleaning—The exterior and interior will stay clean if washed frequently with a solution of hot water and detergent.

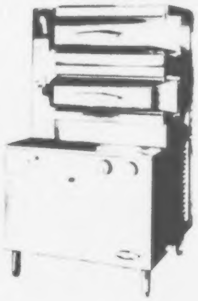
    a. Wipe up any spills with a paper towel while oven is hot.
    b. Wait until oven is cool for complete cleaning.
    c. Use manufacturer's suggested materials for cleaning the interior.

3. Energy conservation:

    a. Set thermostat at desired temperature and allow minimum time for preheating. Remember, higher settings will not shorten preheating time, but will waste fuel.
    b. The fan must be "on" in the convection oven when in use.
    c. Schedule roasting and baking for maximum oven efficiency. Make sure recovery time is allowed between loads.
    d. Do not open door to check products. Set timer and avoid losing oven heat.
    e. Use a low temperature (275° F. to 325° F.) and a meat thermometer for roasting meat; saves food and fuel.
    f. Have a serviceman check thermostats and all working parts at least once or twice a year.

C. Compartment steamer.

1. General operating instructions:



Compartment Steamer

a. Close door gently to protect gasket. Lock door according to manufacturer's instructions.

    (1) Do not close too tightly (just enough to lock steam in) as gasket may be cut.
    (2) Do not try to open door while operating.

b. Turn on according to manufacturer's instructions.
c. Preheat the steamer just long enough to bring pressure up.
d. Put food in baskets or pans. (Do not fill to top; allow room for expansion of food.)
e. Push valve to release steam; open door after steam is released.
f. Place baskets or pans in steamer. Close door and pull steam valve. (See directions above.)
g. Start timing when desired pressure has been reached.

    (1) Length of cooking time varies with the type of steamer, kind and amount of food cooked, and containers used.
    (2) Use of timer is recommended to prevent over-cooking.

h. Push valve to release steam.

    (1) Turn off controls and/or switch on gas burner. Allow pressure to return to zero.
    (2) Open door gently to prevent splashing of hot foods. Remove food.

i. Leave door open or ajar to prevent gasket from sticking to compartment when not in use.

2. Safety precautions.
   - a. Guard against possible steam burns when opening door.
   - b. Be certain that safety valve is in good working order.
   - c. Clean up spilled foods immediately so vent will not become clogged.
   - d. If steam pressure rises above safety level, shut off steam and call reliable service company.
   - e. If steam leaks around door after tightening, have steamer checked by reliable service company; escaping steam is wasteful.
   - f. See that proper water level is maintained in self-contained steamers to prevent boiler from burning out.
   - g. Check water level at intervals during operation; never use without water.

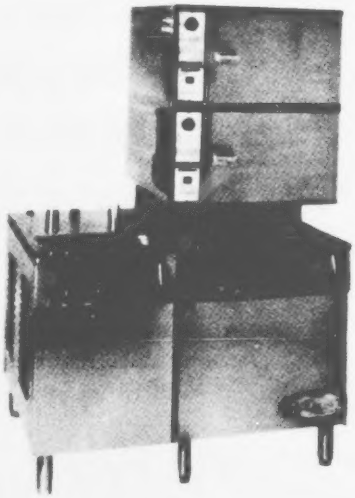
3. Cleaning.
   - a. Scrub interior with stiff brush dipped in hot detergent solution.
     - (1) If model has metal grates, remove and clean, scrubbing both sides of grates with brush; rinse and dry.
     - (2) Remove water from interior by means of a drain in the bottom of each deck. Dry with a clean cloth and replace metal grates.
   - b. Clean inside and outside of doors with hot detergent solution.
     - (1) Scrub door gasket thoroughly (fats, food acids, and alkalies deteriorate gasket and off flavors may develop).
     - (2) Scrub space between door and wheel handle. Rinse and dry. Leave doors open or ajar to prolong life of the gasket.
   - c. Blow down exhaust pipes at least weekly to prevent lime and mineral build-up.
   - d. Follow manufacturer's instructions for cleaning and polishing all exterior finishes.

4. Energy conservation.
   - a. Save time and fuel by using the steamer at full capacity.
   - b. Check all gaskets, gauges, and fittings to prevent escape of steam.
   - c. Energy can be saved by following exact cooking times.

D. Convection steamer.

1. Advantages of the pressureless convection steamer are:
   - a. Faster cooking at lowest possible temperature.
   - b. Retains maximum:
     - (1) Nutrients.
     - (2) Color.
     - (3) Flavor.

2. General operating instructions (the steamer is fully automatic):
   - a. Set the timer.
   - b. Punch the button.
   - c. Read the control panel for:
     - (1) Signal light, indicating unit is operating.
     - (2) Automatic shut-off and audible signal indicating food is ready.



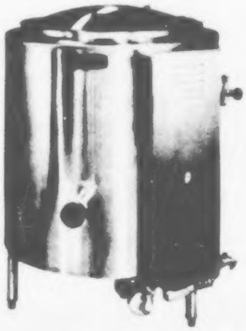
CONVECTION STEAMER

3. Cleaning.
   - a. Scrub interior with stiff brush dipped in hot detergent solution.
   - b. Remove stainless steel wire pan racks and scrub with brush or run through dishwasher.
   - c. Clean and polish outside, following manufacturer's instructions.

4. Energy conservation.
    a. Use steamers at full capacity.
    b. Follow time and temperature directions.
    c. Follow routine maintenance plan.
5. Convection process equipment is expanding. Half size ovens and steamers of various sizes are on the market.

E. Steam-jacketed kettle.

1. General operating instructions:
    a. For electric and gas self-contained kettles, keep water at halfway level in gauge glass. For kettles requiring addition of water, fill jacket and check valve according to manufacturer's instructions.
    b. For electric or direct steam kettles, turn on steam valve or electric switch. For gas kettle equipped with pilot, turn on main burner valve. Adjust heat or steam to proper temperature and pressure; adjust thermostat.
    c. Add food to be cooked; do not fill to top. Use long-handled paddle for stirring food.
    d. Remove food with long-handled dipper or drain out through draw-off faucet. For trunnion type kettle, remove food by tilting kettle.
    e. Turn off steam valve, electric switch, or burner valve. Fill kettle with warm water above cooking level until cleaning time.



STEAM-JACKETED KETTLE

2. Cleaning.
    a. Scrub interior briskly with stiff brush (a long-handled "gong" brush, either nylon or regular, works well).
    b. A synthetic scrub pad and a handful of crushed ice are useful for scrubbing the interior of the kettle when food is cooked on. This treatment is most effective while the kettle is still hot. Be sure to protect your hands with gloves.
    c. Open valve at bottom of kettle, drain, close valve.
    d. Remove strainer, wash, rinse, and air dry. With stiff brush, scrub entire kettle, inside and outside, lid, hinges, etc.
    e. Use hot detergent solution.
    f. Open drain valve, scrub valve with stiff bottle or urn brush; as solution drains out, close drain.
    g. Fill kettle about ⅓ full of warm water. Rinse well inside and outside; use brush or clean mop. Drain and dry. Leave lid partially open.
    h. Clean floor around kettle and the floor drain after each use. Mop dry to prevent slips.
    i. For weekly cleaning, follow directions above, giving a more thorough cleaning of outside, and polish.
3. Safety precautions.
    a. Raise kettle lid away from body; avoid steam burns.
    b. See that proper water level is maintained in water jacket.
    c. If water jacket has gone dry, do NOT add water without first allowing kettle to cool.

   d. Be sure that safety valve is in good working order; check it daily.
   e. If steam pressure rises above safety level, turn off kettle and call reliable service company.
   f. Use long-handled paddles, dippers, and DRY pot holders.

4. Energy conservation.

   a. Save time and fuel by using the steam kettle at full capacity.
   b. The steam kettle will use less energy when the lid is closed.
   c. Energy can be saved by opening the lid only as necessary to inspect the cooking progress.

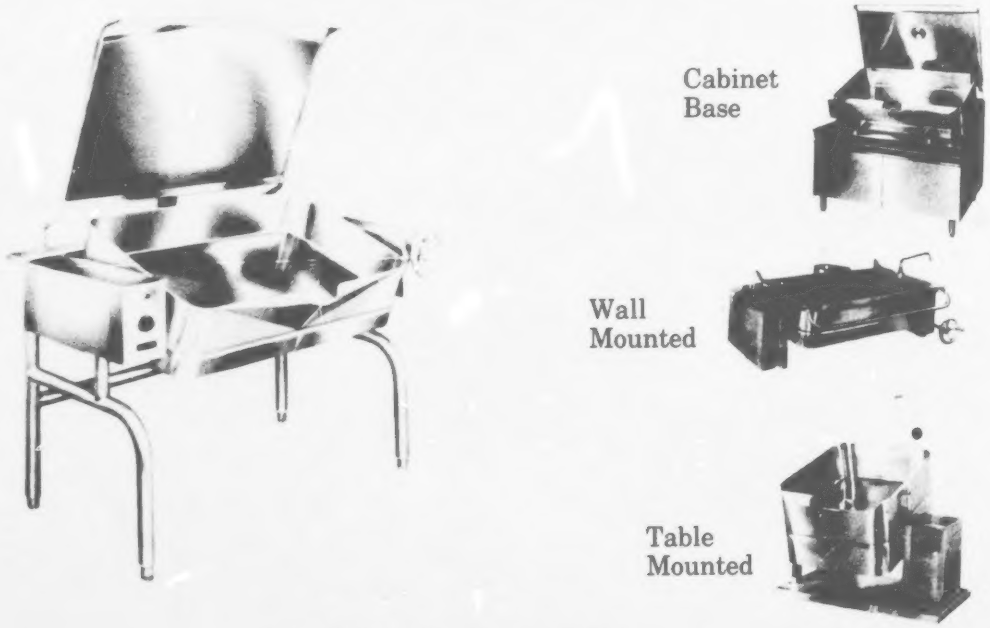
F. Tilting braising pan.

1. The tilting braising pan provides many of the advantages of the conventional-design kettles and, in addition, features a large flat heating surface.

   a. Flat bottom design gives even heat distribution for uniform browning and cooking; counterbalanced cover and pouring lip provide for flexibility in use. In many preparation units the tilting braising pan may reduce or eliminate top of range cooking.
   b. Versatility: The tilting braising pan is ideal for meat roasting and braising, vegetable cooking and other kettle items, such as stews, gravies, and eggs.

2. Steam-jacketed kettles and tilting braising pans can be used together. Do not consider the combination unless serving at least 500 meals. After 500, consider the choices available between combinations in different capacities of the two pieces of equipment according to the number of meals, the type of meals served, and floor space available.
3. Energy conservation.

   a. Use this piece of equipment at full capacity.
   b. Clean according to manufacturer's directions.
   c. Oil mobile parts.
   d. During the cooking process, keep lid closed except when adding products.
   e. Use correct cooking time and recommended temperature.



Cabinet Base

Wall Mounted

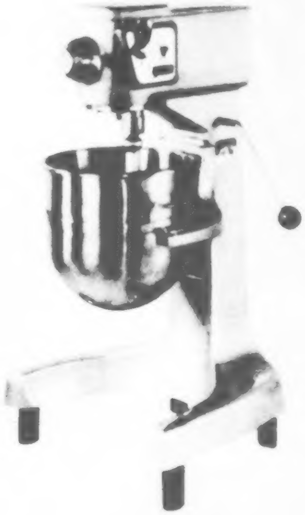
Table Mounted

TILTING BRAISING PAN

G. Food mixer.

1. General operating instructions. Read and follow carefully the manufacturer's directions for each machine.
   - a. Select appropriate size bowl. Place in bowl support, clamp in place.
   - b. Place ingredients in bowl; ½ to ⅔ capacity.
   - c. Select proper beater for ingredients to be mixed, insert in bowl, and attach to mixer shaft.
   - d. Raise bowl into mixing position; use wheel or lever.
   - e. Push start button; set gear on desired speed. CAUTION: For dry mixes, start at low speed and shift to higher speed as needed.
   - f. Push stop button. Leave machine in low gear when not in use.
   - g. Lower bowl by means of wheel or lever. If using large bowl, lower into dolly for transporting. Remove beater. Remove bowl.
   - h. Immediately after use, clean bowl support, beater shaft, shell, and base with hot detergent solution. Rinse and dry.
   - i. Scrape and brush out groove on beater. Wash bowl and beaters immediately after using. Rinse and dry beaters and hang up to prevent bending. Rinse and dry bowls thoroughly to prevent rusting.

FOOD MIXER

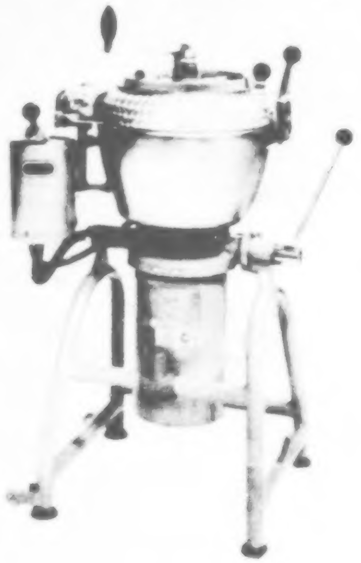


2. General care:
   - a. Wash, rinse, and dry attachments immediately after using.
   - b. Most attachments are made of cast metal which breaks easily and cannot be welded.
   - c. Allow space for storage as near mixer as possible.
   - d. Hang beaters and whips.
   - e. Have bowls retinned, if necessary. Evaluate cost of retinning against new purchase cost for bowls.
3. Safety precautions:
   - a. When cleaning mixer, do not allow water to come in contact with motor or wiring.
   - b. Select proper bowl and proper beater or whip for the type of mixture.
   - c. Be sure to fasten bowl and beater or whip securely before starting motor.
   - d. Do not put hand or spoons into bowl while the mixer is in operation.
   - e. Stop the machine before scraping down side of bowl during mixing process.
   - f. Always use rubber scraper, flexible scraper or long-handled spoon to scrape down bowl and remove food from beater.
   - g. Use mixing bowls for mixing only; NEVER on range or in the oven.
   - h. Allow proper mixing time for products; over-mixing may be as damaging as under-mixing.

i. If mixer is used for a long period, allow time for motor to cool. Most mixers operate at capacity load for one hour without over-heating or damaging motor.
j. To start the motor, either turn on the switch or press the start button (depending on the equipment). The shifter handle should be at one of the numbers indicating a speed, not at an intermediate position.
k. Turn motor off before changing gears if machine does not have start button.

NOTE: Lubricate according to the manufacturer's directions. The motors have grease packed ball-bearings and require little attention. The transmission gears are packed with a special grease that will last for several years. Lubricate the bowl slideways occasionally, by applying a very small amount of oil with the tip of your fingers. Occasionally lubricate the bowl lift.

VERTICAL CUTTER/MIXER



H. Vertical cutter/mixer:

1. General operating instructions. The high output and versatility of the vertical cutter/mixer (VCM) enables faster production and quality control methods. This machine can be used for the preparation of bakery products meats and salad dressing, cutting of fresh vegetables and pureeing fruits, etc. in minutes and seconds.

    a. When loading or operating the VCM, place the locking pin in the vertical locking hole and tighten the locking lever. This prevents the bowl from tipping while the machine is running.
    b. In attaching mixing and homogenizing baffles:

        (1) Raise bowl cover.
        (2) Place baffle on motor shaft in bowl lid.
        (3) Using hand pressure, tighten left-hand locking cap nut.

    c. To attach standard knife.

        (1) Remove mixing baffle, inspection cover and any accessory from center shaft.
        (2) Place drive clutch for the knife on center shaft and knife in shaft opening.
        (3) Check to see that locking finger of the knife is locked into inspection grill.
        (4) Tip machine to horizontal position and lock.
        (5) Use low speed.

2. To Unload:

    a. Be certain the machine has come to a complete stop before opening the bowl cover. Remove the shaft with the cutting knives before emptying the bowl.

286

b. Non-cutting accessories, such as the standard stir/mix shaft, grater shaft, or hinged/wing knives, need not be removed.
c. If necessary, scrape bowl cover before tipping the machine.
d. When removing the finished product from the bowl, lock the bowl in various positions by means of the bowl positioning lever.

3. Cleaning.

a. Use standard narrow knives.
b. Use either mixing baffle or homogenizing baffle.
c. Fill bowl ⅓ full of warm water; not hot water.
d. Add a small amount of detergent.
e. Close cover and inspection cover.
f. Place towel over inspection cover.
g. Start in low speed, switch to high speed.
h. Turn baffle counter-clockwise.
i. Turn switch off; wait until machine comes to a stop before opening the cover.

4. Precautions.

a. When the VCM is not in use DO NOT leave any attachment on the center motor shaft. Lay attachments in bowl separately.
b. Check knife; be sure the locking nut is tight.
c. Stop VCM to check progress of product.
d. Do not exceed 80% bowl capacity when using liquids.
e. Do not exceed the recommended maximum capacities.
f. Always put liquid into bowl first, then dry ingredients. Add shortening last.
g. Remove gristle and tendons before processing meat.
h. When chopping large or bulky items:

(1) Limit product amount.
(2) Run VCM briefly to start then add balance of load for final cutting and mixing.
(3) Chill cheese or meat before cutting.
(4) Remove mixing baffle during first 10 seconds of chopping time.

i. Distribute load evenly in bowl.
j. When mixing hot ingredients, open the inspection cover slightly to allow pressure to escape; cover the opening with a clean towel to prevent splashing.
k. The design of the VCM does not lend itself to preparation of products needing air. Example: whipped potatoes.
l. Keep knives sharp. Use directions and equipment recommended for the specific model.
m. Conserve energy by using the VCM according to the specific directions.

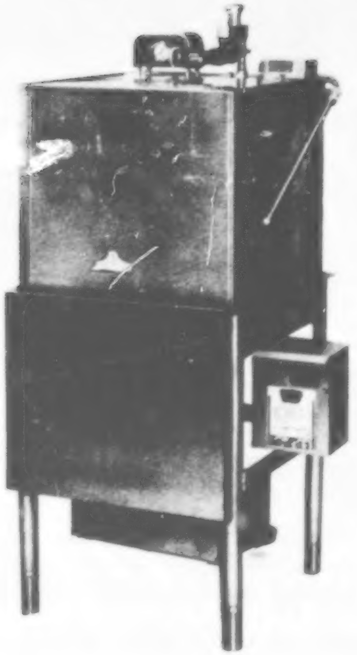
VI. DISHMACHINES

A. Assure clean sanitary serving and cooking utensils if performing at top efficiency. Check state and local regulations regarding:

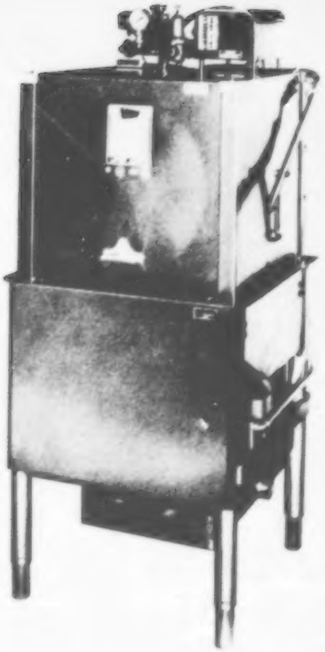
1. Temperature of water.
2. Use of food disposer.
3. Spray rinse.
4. Floor drains.
5. Grease traps.

B. Prepare machine for operation according to manufacturer's instructions.

1. Replace all clean parts.
2. Close drain.
3. Fill tank(s).
4. Add specific quantity of dishwashing compound if automatic detergent dispenser is not available.



DISHMACHINE



LOW TEMPERATURE DISHMACHINE

5. Prepare dishes for washing:
   a. Scrape all soiled dishes with plate scraper.
   b. Stack all like pieces together.
   c. Soak flatware.
   d. Pre-rinse dishes.
6. Place dishes or trays and flatware in proper racks and baskets; correct placement is important.
7. Place filled rack in machine. Wash and rinse according to manufacturer's instructions.
8. Constantly check to maintain wash water temperature 140° F., rinse water temperature at 180° F.
9. Allow dishes or trays to air dry completely in racks before stacking. Do not use towels for drying.

C. Dishmachine cleaning.

1. Shut off motor.
2. Open tank drain(s).
3. Remove and thoroughly clean all parts using hot detergent solution and stiff brush.
4. Rinse and air dry; do not replace parts until next operation of machine.
5. Scrub interior of machine with long-handled stiff brush.
6. Rinse interior of machine with hot water, rinsing from ends of machine toward center.
7. Wash dish tables with hot detergent solution; rinse thoroughly with hot water and dry.
8. For certain types of machines, remove and wash curtains with hot detergent solution; rinse thoroughly and hang up to dry.
9. Wash exterior of machine with hot detergent solution. Rinse and dry machine.
10. Leave open to air-dry inside.
11. Scrub interior thoroughly to keep free of scale and other mineral deposits.

D. Precautions.

1. Follow manufacturer's instructions for care and use.

2. Keep machine arms free of minerals and water deposits.
3. Use only manufacturer's recommended detergents, softeners, and rinse solutions.
4. Ensure efficient hot water supply (adequate hot water tank or booster heater).
5. Clean drain trap after each use; frequently remove and clean strainer trays.
6. Check temperature gauge during each operation; do not allow to overheat.
7. Clean, dry, oil, and check all parts at the end of the school year.

E. Energy conservation.

1. Use to full capacity.
2. Do not overload.
3. Turn off motor when not in use.

F. Low temperature dishmachines are designed to conserve water and energy.

1. Advantages:
    a. Rinse-tank overflow water may be carried in a tube through the wash tank and recirculated under pressure for "inside machine scraping" of dishes.
    b. Operates with chemical sanitizer usually between 120° F. and 140° F.
    c. Control valve automatically shuts off machine after last rack of dishes.
2. Disadvantages:
    a. Dishes may require extended drying time.
    b. Chemical solution must be constantly monitored for safe level of sanitizing.

VII. REACH-IN REFRIGERATORS

A. General maintenance.

1. Gaskets: Keep clean and free from dirt and grease. Wipe with a damp cloth as often as necessary.
2. Latch and hinge: Should be oiled according to manufacturer's directions.
3. Cooling coil drain pan and condensation evaporator dish: Remove periodically and clean thoroughly.

NOTE: It is important that deposits do not accumulate and interfere with the operation of drain tube which disposes of condensation.

4. Self-contained cabinets: Periodically inspect the condenser, shut off the unit, and brush or vacuum dust and lint from the condenser.
5. Thermometer: Check reading to be sure that the proper temperature is being maintained. A door left open for a considerable length of time or a recent load of a large amount of food will temporarily cause the thermometer to indicate an undesirable temperature.
6. Hermetically sealed compressors on self-contained cabinets are fully sealed with a lifetime supply of oil and will need no further lubrication or maintenance.
7. Fan motors are fully sealed with a lifetime supply of oil and require no lubrication.
8. Keep the refrigerator level. This helps the doors to fit correctly.
9. Keep the drain areas inside the refrigerator and freezer clean to avoid stagnant water build-up which might be a breeding ground for mold and mildew.

B. Cleaning the cabinet

1. Reach-in refrigerators require cleaning at least once a week.
2. Remove food supplies.
3. Defrost when necessary following manufacturer's instructions.
4. Cover or wrap the food to minimize temperature changes and prevent moisture loss and also for sanitary protection.
5. Wash shelves with hot water containing a good detergent. It may be necessary to scrub them with a pot brush to remove grease and food particles.
6. Rinse well with hot water.

7. Wash the interior with warm water and baking soda using one tablespoon of baking soda to each quart of water.
8. Wash the exterior with warm water and a good detergent.
9. Wash the rubber door gaskets with warm water and mild soap to prolong usage.
10. Foods should be carefully inspected for quality and clean containers before returning to the refrigerator.

NOTE: For more information, refer to the Sanitation and Safety Section VII, of this handbook.

VIII. WALK-IN REFRIGERATOR AND FREEZER

A. Refrigerated storage space should be convenient:

1. To receiving area.
2. To the food preparation center.

B. Walk-in refrigerators and freezer are advantageous for kitchens preparing 200 or more meals per day.

C. The floor of walk-in refrigerators and freezers should be flush with the outside floor to permit easy access for mobile equipment such as:

1. Shelves.
2. Tray racks.
3. Dollies.
4. Carts.

D. Thermometers should be located on the outside to permit ease in checking.

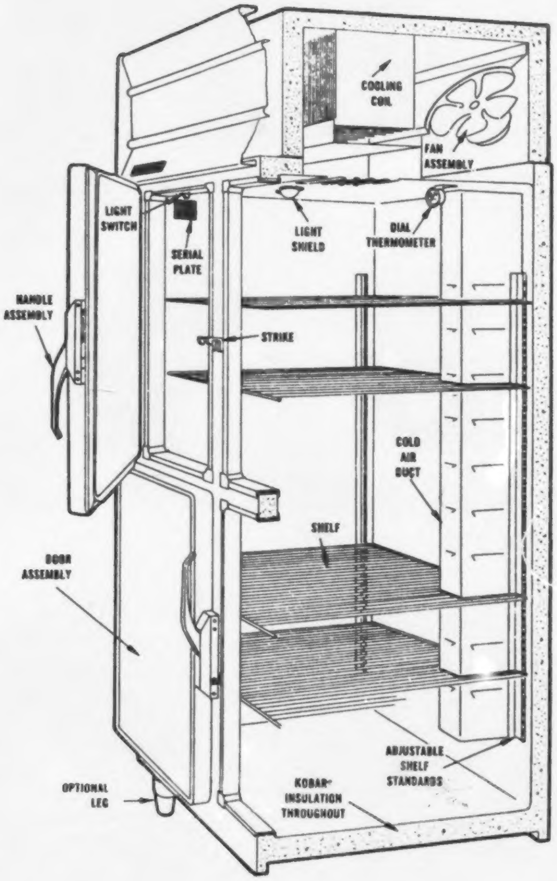
E. Cleaning.

1. Clean thoroughly at least once a week.
2. Remove all mobile or portable equipment before starting.
3. Wash shelves, meat hooks, skids, dollies, etc. with hot water and a good detergent.
4. Walls and floors may need to be scrubbed with a hot detergent solution and rinsed thoroughly.
5. Flush drain pipes with hot water and baking soda.

F. Energy conservation.

1. Check the gaskets regularly.
    a. Paper inserted between the door and frame should resist withdrawal.
    b. Gasket is not sealing properly if paper moves freely and it needs to be replaced.
2. Feel outside of the refrigerator for cold spots. Cold spots indicate that insulation has either shifted or is waterlogged.
3. Hot items placed in a refrigerator should be stored in shallow pans and located with sufficient space between pans for cold air to circulate.
4. Do not set thermostats below the stated or required temperature. This fractionally decreases the freezing or cooling time, but the energy consumption is greater for a given load.
5. Check evaporators for frost.
    a. Ice build-up decreases the evaporator's effectiveness.
    b. Most units have automatic defrosters.
    c. Defrosters can be reset to defrost after operating hours.
6. Thawing frozen food in the refrigerator will reduce the load on the refrigerator.
7. When storing food items, keep them clear of the air outlets.
8. Label items to avoid searching with the doors open.
9. Clean the condenser fans and coils regularly. Grease build-up inhibits heat transfer.
10. Locate refrigeration equipment away from sources of heat.

REACH-IN REFRIGERATOR


COOLING COIL
FAN ASSEMBLY
LIGHT SWITCH
SERIAL PLATE
LIGHT SHIELD
DIAL THERMOMETER
HANDLE ASSEMBLY
STRIKE
COLD AIR DUCT
SHELF
DOOR ASSEMBLY
ADJUSTABLE SHELF STANDARDS
OPTIONAL LEG
KOBAR® INSULATION THROUGHOUT

IX. MOBILE EQUIPMENT

A. Increases efficiency in the kitchen.

1. Conserves man-power.
2. Saves energy.
3. Eliminates stooping and lifting.

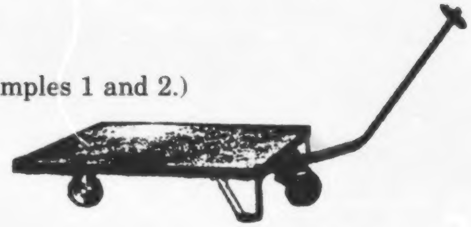
B. Many styles of carts and dollies are available. Examples are:

1. Commercial types.
2. Custom built by
    a. Custodians.
    b. Shop classes.
    c. Local contractors.

C. Mobile equipment is used to transport both food and equipment.

1. Through all steps in preparation and serving process:
    a. Storage.
    b. Preparation.
    c. Refrigeration.
    d. Serving.
2. May serve dual purpose:
    a. Preparation to serving.
    b. Clean-up to storage.

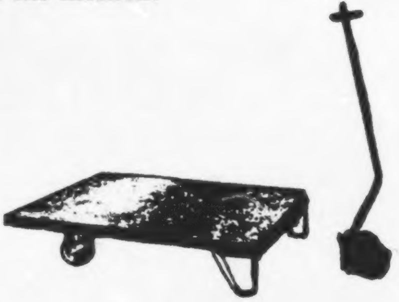
3. Dollies should be used:
    a. Under garbage cans.
    b. Under storage cans.
    c. For large power mixer bowls.
    d. For transporting cases (milk or food). (See examples 1 and 2.)
4. Storage containers may be used:
    a. As portable dish and tray storage.
    b. For flour and sugar bins.
    c. For beans and rice bins.



Example No. 1

5. Use carts and mobile tables:
    a. To transport supplies from storage to preparation area (can opener may be mounted on such a table).
    b. To transport foods from preparation area to serving counter.
    c. For oven-height cart to transport hot counter pans from oven to serving counter.
    d. As auxiliary work tables for use in any part of the kitchen.
    e. As mobile scraping units.
6. Use mobile serving equipment:
    a. To transport food to another building.
    b. To transport food for room feeding.

D. Selection factors:
    1. Meets essential needs.
    2. Cost.
    3. Performance.
    4. Meets safety and sanitation codes.
    5. Appearance and design.
    6. Mobility.



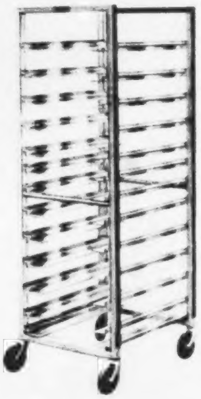
Example No. 2

E. Planning food service facilities requires special attention be given to transportation devices to:
    1. Carry loads and save steps:
        a. Bring materials and equipment to workers.
        b. Flexible movement of equipment for forming good work centers.
        c. Improved productivity.
    2. Lessen fatigue and reduce labor. Rehandling of stored equipment and supplies can be lessened through the use of mobile units.
    3. Allow room for easy movement of equipment and supplies.
        a. Storage space made available for mobile equipment.
        b. Aisles and work areas sufficiently large to allow for entry and use in work center.
            (1) The space in which equipment is used should be four feet.
            (2) Where workers pass regularly, 48 to 60 inches of space is suggested.

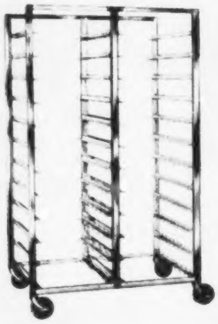
NOTE: See examples of mobile equipment.

F. Mobile Equipment (Examples)

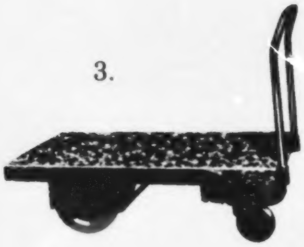
1.



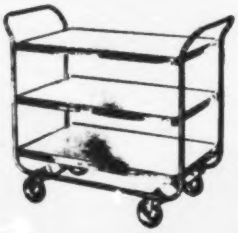
2.



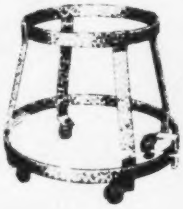
3.



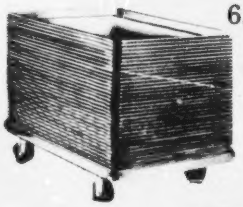
4.



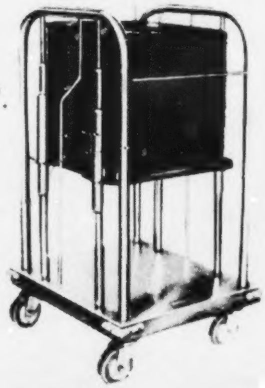
5.



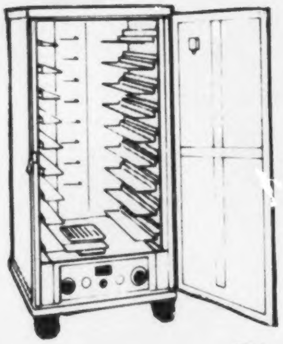
6.



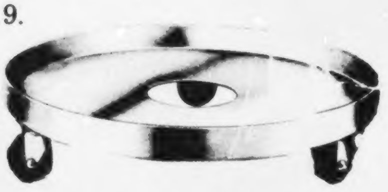
7.



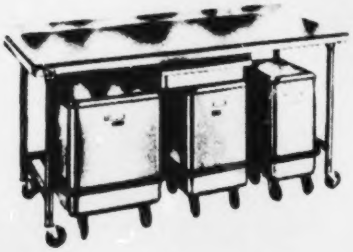
8.



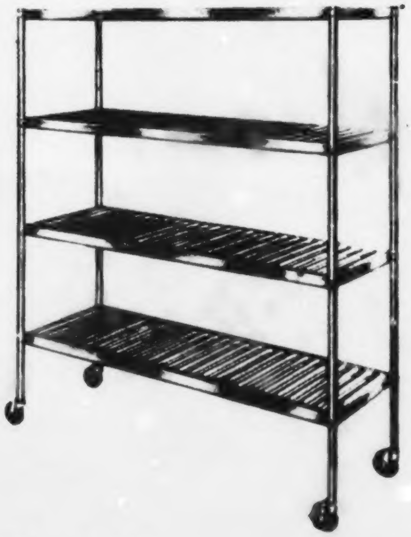
9.



10.



11.



1. Mobile Tray Rack
2. Double Mobile Tray Rack
3. Case Goods Dolly
4. Transport Cart
5. Bowl Carrier
6. Dishrack or Tray Dolly
7. Tray Lowerator
8. Heated Cabinet
9. Can Dolly
10. Mobile Work Table & Ingredient Bins
11. Pot and Pan Rack

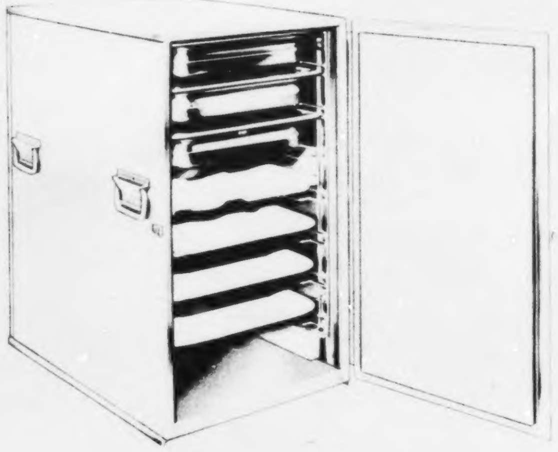
X. HOT OR COLD FOOD CABINETS

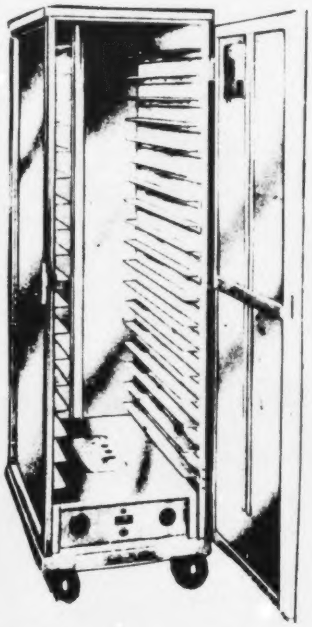
A. Hot and cold food cabinets are used primarily for transport

1. Caution must be used to maintain safe food temperatures.
2. Follow manufacturer's instructions for cleaning cabinets.

B. Rollers or dollies and side-handles are useful to promote mobility and ease of transport.

C. Use food cabinets only for the purpose designed by the manufacturer.





PORTABLE HOT OR COLD FOOD CABINETS

XI. FOOD SERVING COUNTERS

A. Types of food serving counters:

1. Stationary.
2. Portable.

B. All food serving counters:

1. Designed for holding food at a temperature of 140° F. to 160° F. or more.
2. Used for holding food immediately prior to and during serving periods only.

C. Portable temperature controlled food serving counters may be utilized for:

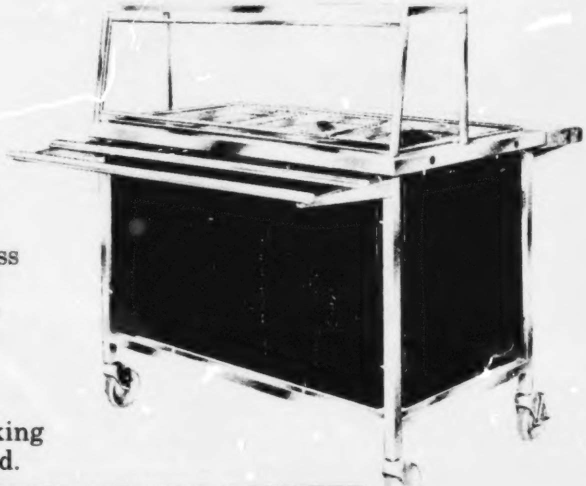
1. Adding a second serving line.
2. Satellite facilities.

D. Cleaning.

1. Wipe with hot soapy water and cloth.
2. Rinse and dry.
3. Apply a non-abrasive metal polish to stainless steel and plated parts and surfaces.
4. All insets should be removed and thoroughly washed after each meal.

E. Conserve energy.

1. Do not use the food serving counter as a cooking appliance. It is designed to hold, not cook food.



FOOD SERVING COUNTER

2. Follow manufacturer's instruction for use and care of the equipment.
3. If the food serving counter is not thermostatically controlled, determine satisfactory flame heights based on food thermometer readings.
4. Energy source should be turned on only long enough to reach temperature prior to use.
5. Reassemble correctly after each cleaning.

XII. SNEEZE GUARDS

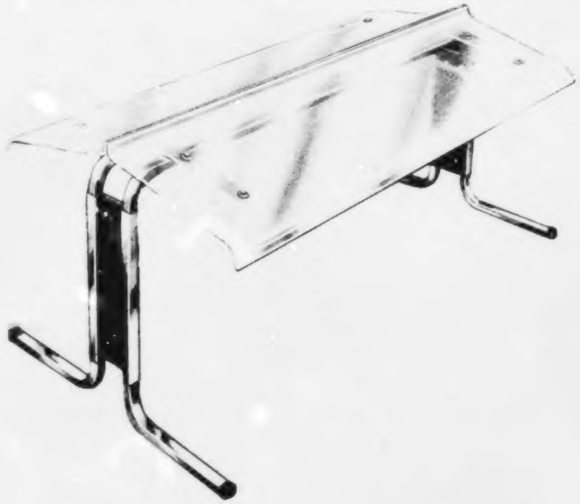
A. Sneeze guards protect food from the customers. They are required by the State Health Department.

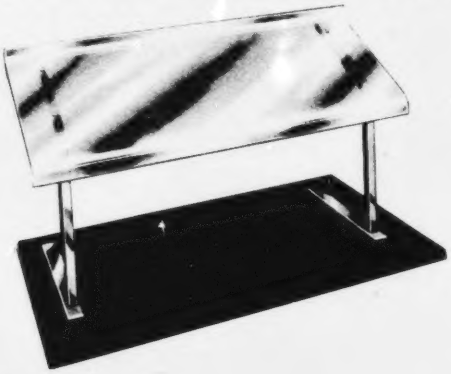
B. Portable sneeze guards:

1. May be used to extend a serving line.
2. May be used to cover a salad bar.

C. Cleaning.

1. Follow manufacturer's directions.
2. Avoid using abrasives.
3. Clean daily.
4. Use mild detergent and soft brush.
5. Polish with absorbent cloth or paper.





SNEEZE GUARDS

XIII. MILK COOLER

A. Temperature during storage and distribution of milk must be constantly maintained from 32° F. to 45° F.

B. The size of the cooler should be sufficient to accommodate the daily participation level of the program.

C. Consider purchasing front-loading milk cooler for ease of reach by elementary children.

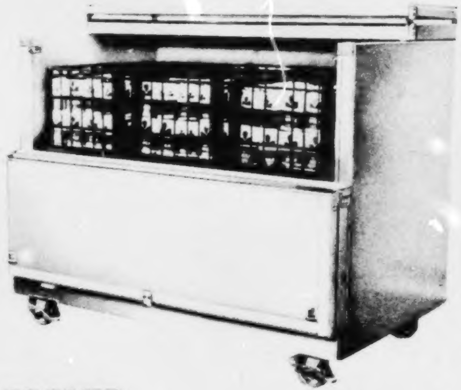
D. The cooler should be mechanically refrigerated.

E. The cooler should accommodate milk cases.

F. If milk cooler is placed in the serving line, it should be similar in height to the serving counter.

G. Cleaning

1. Check for leaking cartons.
2. Clean up all spilled milk daily.
3. Empty and use manufacturer's recommended sanitizing solution daily.

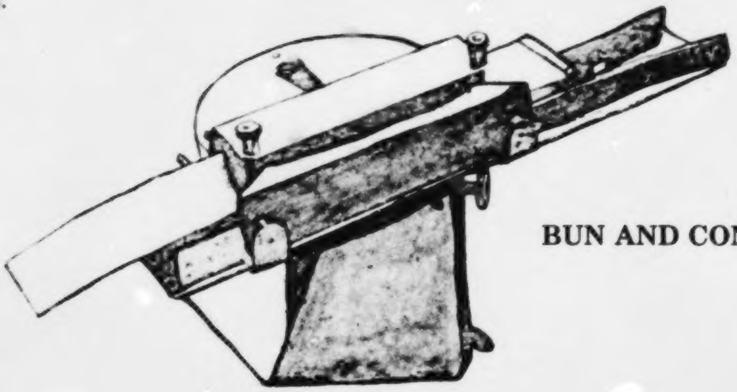


MILK COOLER

XIV. SMALL EQUIPMENT

A. Bun and coney slicer

1. Bun and coney slicers:
   - a. Are adjustable for width and depth.
   - b. Can be adjusted to cut all the way through or part way through a bun.
2. A bun and coney slicer slices:
   - a. Hamburger buns.
   - b. Hot dog rolls.
   - c. Biscuits.
   - d. Muffins.



BUN AND CONEY SLICER

3. A bun and coney slicer enables faster and more uniform slicing.
4. The slicer is recommended for programs where the quantity of buns used justifies the expense of the purchase of the piece of equipment.
5. Follow the manufacturer's instructions for use and care of the specific slicer purchased.

B. Electrical institutional can opener.

1. Operation.
   - a. Knife holder or blade should be in the up position when beginning operation.
   - b. Pull handle down gently to engage drive gear.
     - (1) The knife holder should move all the way down before the drive gear starts to move up.
     - (2) If drive gear moves up prematurely, the motor will start too soon and the can will be rejected.

ELECTRIC CAN OPENER

2. Problems which may occur:
   - a. Knife holder sticking may be caused by dirt or gum behind the knife holder. Remove and clean.
   - b. Can rejection is often caused by restricting the can rotation.
     - (1) Support can by holding finger on bottom of can.
     - (2) No. 10 cans normally do not require support if properly placed.
3. Adjustment and operation.
   - a. Motor should start as the knife begins to puncture the lid.
     - (1) Early starting will cause rejection.

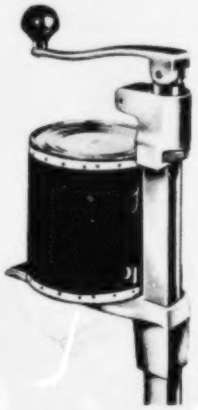
(2) Late starting will cause difficulty in puncturing the can lid and require a heavy hand on the handle as well as dull the blade.

b. Center the rim of the can between the blade and drive gear.

4. Clean daily with soft brush and sanitizing solution.

C. Standard can opener:

1. May be mounted permanently on a table or on a mobile cart.
2. Shank may be cleaned in the dishmachine.
3. Blades are easily changed when dull.
4. Gears are replaceable.

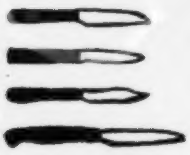


STANDARD CAN OPENER

D. Basic knives: use and care.

1. Paring knife:

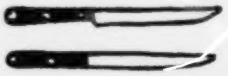
a. The four most common styles of paring knives are—curved, spear, sharp, and clip point.
b. Delicate pepper rings and finely sliced olives or cherries can be cut with a curved or sharp point paring knife.
c. A cook's paring, or spear point knife, can be used to remove corn from the cob, break up heads of lettuce or cabbage, peel fruit or vegetables, and cut beans.
d. The clip point is used for eyeing potatoes, seeding, peeling, and pitting.



PARING KNIVES

2. Utility knife:

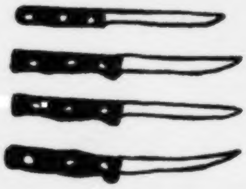
a. A sharp 6-inch utility knife is most efficient for slicing non-solid fruits and vegetables, such as tomatoes or squash.
b. For acid fruits, a stainless steel blade is preferred.
c. Useful for cutting large melon rings, cutting heads of lettuce into wedges, preparing cabbage for shredding and halving grapefruits and oranges.



UTILITY KNIVES

3. Boning knife:

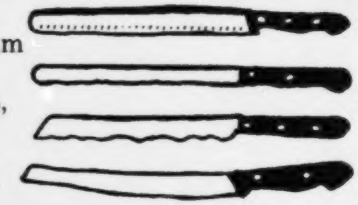
a. Blades vary in length from 4 inches to 8 inches.
b. Many cooks simplify carving and get extra servings by boning out a roast.
c. For boning roasts, whole hams, lamb legs, veal legs, and filleting fish, a narrow flexible blade is best.
d. The wider stiff blade is used for cutting raw meat and many other trimming operations on less thick cuts of meat.



BONING KNIVES

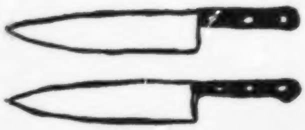
4. Slicers and carvers:

a. The most important carving knife is the roast beef slicer, most often used to carve rounds, boneless roast, boiled brisket, pot roast, butt roast, and standing rib roasts.
b. The narrow cold meat slicer or ham slicer is used to slice ham or left-over cold roasts of all kinds.
c. The wide, stiff blade does a better job on hot meats, whereas, the narrow, more flexible blade cuts cold meat more efficiently.
d. Although there are many patterns to select from, a slicer or carver should have adequate length to permit smooth slicing action.



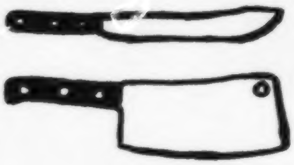
SLICING AND CARVING KNIVES

5. French knives:
    a. Available in blade lengths from 8 inches to 14 inches, this knife has more uses than any other one knife in the kitchen.
    b. The blade is wide at the handle and tapers to a point. This protects knuckles when dicing or mincing celery, onions, nut meats, parsley, peppers, etc.
    c. When properly used, the cook positions the point of the knife on the cutting board beyond the food to be diced or sliced and without lifting the point, works the knife in a rocking motion to cut evenly and rapidly.
    d. Used for carving hot roasts also.
    e. The blade may or may not be forged.



FRENCH KNIVES

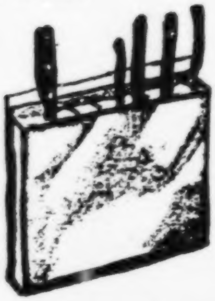
6. Butcher and cleaver knives:
    a. For the odd jobs in the kitchen, the butcher knife can be used for dicing, cubing, or trimming raw meat.
    b. The cleaver is used for cutting poultry joints.



BUTCHER AND CLEAVER KNIVES

7. Cleaning.
    a. Knives should be washed as used; never thrown into a sink of water to be found unknowingly by the next person.
    b. Knives must be sanitized, particularly after use with raw meats or poultry and before using with other foods.

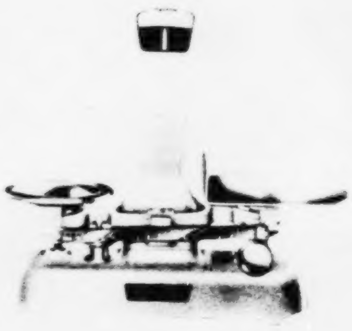
8. Storage.
    a. Knives stored loose in a drawer are a safety hazard.
    b. Safe storage for all kitchen knives should be provided.



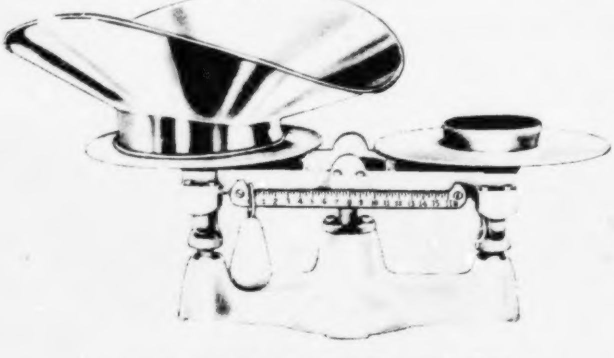
KNIFE HOLDER

E. Scales.

1. Provide consistent accurate measurement.
2. Save time and energy.
3. Are convenient and easy to use.
4. The balance scale, due to high accuracy, is recommended in school food service programs.
    a. A balance scale which weighs up to 16 pounds provides versatility and is a good investment.
    b. The scoop and weights are calibrated for each individual scale. Careless handling will diminish accuracy.



BALANCE SCALE

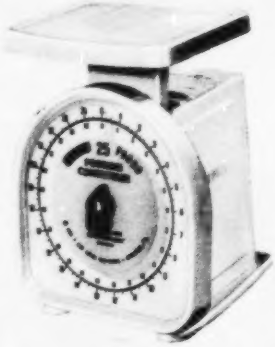


BALANCE (BAKER) SCALE

5. Receiving scales provide a convenient method of checking delivery weights (Examples 3 and 4).
6. Portion controllers are less costly than balance scales. They may be purchased in 2, 5 or 25 pound sizes, depending on intended use.
    a. The 2 and 5 pound scales are convenient in the production area or may be utilized for portion control.
    b. The 25 pound scale may be used as a receiving scale or in the production area (Example 5).
    c. These scales may be metric, conventional, or a combination.

RECEIVING SCALES
(Example 3)

RECEIVING SCALES
(Example 4)



PORTION CONTROLLER
(Example 5)

XV. GUIDELINES FOR AREA AND BASIC EQUIPMENT REQUIREMENTS

A. For purchasing in school lunch program.
    1. On basis of participation.
    2. Adjust to local needs according to:
        a. Size.
        b. Facilities.
            (1) Permanent vs. portable equipment.
            (2) Gas, electric, or steam resources.
            (3) Kitchen layout and work stations.
            (4) Time allowance for serving.
B. The charts on the following pages are designed to serve only as a guide to basic requirements for equipping typical school food service programs.

BASIC REQUIREMENTS FOR EQUIPPING TYPICAL SCHOOL FOOD SERVICE PROGRAMS (Chart No. 1)

Needs vary according to size of program, participation, type of menu, food service facility, and arrangement of equipment.

ITEM	DESCRIPTION	NUMBER OF MEALS SERVED		
		200	500	750 & UP
RECEIVING AREA:				
Dolly	2 wheel—utility weight	1	1	1
Platform Scale	1,000 lb.		1	1
Platform Truck	4 wheel		Optional	Optional
STORAGE AREA				
Dry Food & Nonfood	300 sq. ft. shelf area accomodates 50 shelves—18″ × 48″	100 - 150 sq. ft.	200 - 250 sq. ft.	350 sq. ft.
Wire Shelving	20 uprights, 18″ × 7′3″; 600 sq. ft. shelf area requires 100 shelves—18″ × 48″; 40 uprights, 18″ × 7′3″			
Individual bins on wheels	Various capacity & sizes to fit the individual needs of the program	3 - 4	4 - 6	6 - 9
KITCHEN AREA				
Cooking & Baking Equipment:				
Range or Modular Top Range Unit	Institutional type; 6 burner—36″ high, 36½″ wide, 32½″ deep	1	1	1
Oven	Convection; single; 38⅛″ wide, 39″ deep, 57″ high	1	2	3
	Convection; double; 38″ wide, 42⅛″ deep, 69½″ high including 2″ recessed base		1	1 + 1 single
Compartment Steamer*	2 compartments—45″ wide, 33″ deep, 56″ high		1-8 pan	1-16 pan
Steam-Jacketed Kettle	Aluminum or stainless steel; 40 gallon—36″ diameter, 40″ high, kettle depth 25″		1	1
	60 gallon**			1
Hood or Canopy	Above all cooking and baking equipment with exhaust fan, filters, and lights, and over dishmachine.	1 - 8 × 10 ft.	1 - 8 × 10 ft.	1 or 2 depending upon arrangement of equipment 8 × 18 ft.
Tilting Braising Pan	Electrically heated; 40 gallon—58⅛″ long overall, 24¾″ wide, pan 7″ deep, 36″ working height, 15 kw		1	1
Mechanical equipment:				
Mixer w/Portable Stand	Stand, bowl, and attachments	1-20 qt.		
Mixer, Floor Model Hanging Pot Rack over mixer for attachments	With paddle, wire whip, dough hook, and splash guard; Attachments: 9″ vegetable slicer, grater, and shredder; two bowls for each mixer and bowl dolly for 60 qt.—55¾″ high, 24⅛″ wide, 39³⁄₁₆″ deep	1-30 qt.	1-60 qt.	1-60 qt. & 1 20 qt.
Vertical Cutter/Mixer	40 - 60 qt. will replace a 60 qt. mixer w/attachments and the food cutter; a 30 qt. mixer is needed in addition; floor space area - 6′ × 8′; 220 volts or 440 volts required electrically.		1	1
Food Cutter	Electric; table type; revolving bowl 15″ - 20″ diameter; safety device; bowl and knife guard readily removable for cleaning.			1
Slicer	Electric; heavy duty; commercial; 10″ - 12″	Optional	1	1

*See "pans" for number of perforated and other pans for steamer

**Sixty gallon kettles are recommended only when equipment is direct steam and low profile.

BASIC REQUIREMENTS FOR EQUIPPING TYPICAL SCHOOL FOOD SERVICE PROGRAMS (Chart No. 1 continued)

Needs vary according to size of program, participation, type of menu, food service facility, and arrangement of equipment.

ITEM	DESCRIPTION	NUMBER OF MEALS SERVED		
		200	500	750 & up
Food Waste Disposer	¾ hp capacity - 600 lb. per hour 1 hp capacity - 700 lb. per hour 1¼ hp capacity - 800 lb. per hour 3 hp capacity - 2,000 lb. per hour	1-¾ hp	1-1 hp	1-1¼ hp to 3 hp
Refrigeration Equipment;				
Walk-in Refrigerator	Sectional commercial type or built-in as part of building contract or outside unit with roof; should be designed to maintain temperatures of 36° to 40° F.		8 × 10 ft.	8 × 12 ft.
Reach-in Refrigerator in work station	Institutional type; auxiliary refrigeration unit; 47 cubic ft. is 54″ wide, 36″ deep, 77″ high; 72 cubic ft. is 80″ wide, 36″ deep, 77″ high	1-47 cu. ft.	1-72cu. ft.	1-72 cu. ft.
Pass-through Refrigerator behind serving line	Convenient to food preparation center in kitchen and serving area		1 hot and 1 cold	2 hot and 2 cold
Walk-in Freezer, 0° Storage	Maintain temperature at 0° F. or below; 1 cu. ft. stores approximately 30 to 35 lb.		8′ × 10′	8 × 12 sq. ft.
Chest-type Freezer	Maintain temperature at 0° F. or below; 1 cu. ft. stores approximately 30 to 35 lb.	1-26 cu. ft.	2-26 cu. ft.	
Sinks:				
Sink in Cook's Table	20″ × 20″ × 12″			1-1 compartment Optional
Vegetable Preparation Sink	2 compartment; 24″ × 30″ × 12″ deep with 30″ integral drainboard on each end	1 Optional	1	1
Pot Sink	3 compartments; 24″ × 30″ × 12″ deep with 3′ integral drainboard on each end	1	1	1
Hand Lavatory	In food preparation area	1	1	2
Tables:				
Baker's Table	Stainless steel; one or two drawers in table with portable ingredient bins under table	1 72″ long 30″ wide 34″ high	1 96″ long 36″ wide 34″ high	2 120″ long 40″ wide 34″ high
Cook's Table	Stainless steel; with overhead pot rack and spice shelf, two drawers in table with space for shelf, and portable ingredient bins under table	1 6′ long	1 10-14′ long 42″ wide	1 14-16′ long 42″ wide
Storage Ingredient Bins w/Lids	Polyethylene; on rollers; 30″ high to go under table	3	6	9
Vegetable Table	Stainless steel; with one drawer and shelf below and 10″ shelf above top	1-6 ft.	1-6 ft. to 8 ft.	1-8 ft. to 10 ft.
Portable Work Table	Stainless steel; 72″ long, 30″ wide, 34″ high; with shelf below and under counter cabinet 22″ deep to hold 18″ × 26″ pans	1-6 ft.	1-6 ft.	2-6 ft.
Portable Equipment:				
Table	Stainless steel; mobile dish—34″ high, 34″ wide, 48″ long	1	1-2	2-3
Trucks	Dish trucks; heavy duty; varying sizes; Handtrucks; heavy duty	1 1	3 1	5 2
Slide Pan Rack	24 shelves for 12″ × 20″ and 18″ × 26″ pans	1	2	3

BASIC REQUIREMENTS FOR EQUIPPING TYPICAL SCHOOL FOOD SERVICE PROGRAMS (Chart No. 1 continued)

Needs vary according to size of program, participation, type of menu, food service facility, and arrangement of equipment.

ITEM	DESCRIPTION	NUMBER OF MEALS SERVED		
		200	500	750 & up
Heated Food Cabinet	Thermostatically controlled; not necessary if hot pass-through is used		2	2
Baker's Scales on Portable Table	16 lb. capacity scoop size—15½" × 24", 32" high	1	2	2-16 lb. or larger
Mobile Carts	Tray dispensers—34" long, 22" wide, 36" high;	1	3	As desired
	Bussing 34" long, 22" wide, 36" high;	1	2	As desired
	Utility shelving 31" long, 20¾" wide, 36" high	1	3	As desired
Cabinets	Hot-Cold proof; 21" wide, 69¾" high, 31" deep; Pan sizes—18" × 26"	Optional	1	2
Small Kitchen Equipment:				
Board, Cutting	Composition	1	2	3
Bowls, Mixing	Aluminum or Stainless steel;			
	8 qt.	2	2	2
	12 qt.	2	2	2
	16 qt.	2	2	2
	22 qt.	2	2	2
	48 qt. bowl with dolly		1 dolly with 2 bowls	2 dollies with 4 bowls
Brush, Pastry	3"	2	3	4
Butter Cutter	1 pound	1	Use electric slicer	Use electric slicer
Can Opener	Heavy duty or electric	1	1	2
Clock	Electric; wall	1	1	1
Colander	Stainless steel; 16 qt.	1	2	2
Cutlery Rack		2	4	6
Cutlery	Boning knife—6"	2	3	4
	Paring knife—3"	4	6	8
	Butcher knife—10" optional			
	Slicing knife—12" serrated edge	1	2	3
	French cook's knife—10" blade	1	2	3
	Portion cutter	1	1	2
	Dough and cake cutter; stainless steel blade	1	1	2
	Dough scraper—6" stainless steel blade	1	1	2
	Pizza cutter and Pastry trimmer—2¾"	1	1	2
	Peeler, hand	1	2	2
	Bun divider, 18 blades, 1⅜"	1	1	1 or 2
	Spatula—10"	1	2	4
	Sandwich spreader, blade 3½" long	2	4	6
	Utility turner	2	4	6
	Chef's, steel—12"	1	1	1
Fork*	Cook's fork—14" overall; cook's pot fork, long handle—21" long	1	2	3
Measurers, Dry or Liquid	Aluminum or stainless steel;			
	1 cup size graduated	2	4	6
	1 quart	2	4	6
	1 gallon	1	3	5
Water Pitchers	4 quart	Optional	Optional	Optional

* Also serving equipment

BASIC REQUIREMENTS FOR EQUIPPING TYPICAL SCHOOL FOOD SERVICE PROGRAMS (Chart No. 1 continued)

Needs vary according to size of program, participation, type of menu, food service facility, and arrangement of equipment.

ITEM	DESCRIPTION	NUMBER OF MEALS SERVED		
		200	500	750 & up
Counter Pans	All fit openings—19⅞″ × 11⅞″; Stainless steel;			
	12″ × 10″ × 6″ half pan	4	8	10
	12″ × 20″ × 4″ pan	4	10	15
	12″ × 20″ × 2¼″ pan	12	30	45
	12″ × 20″ × 2½″ perforated pan*			
Bun Pans	Aluminum; sheet pans; 18″ × 26″ × 1″	12	30	45
Roast Pans	12″ × 20″ × 6½″	1	2	4
Sauce Pans	1½ quart to 10 quart size	1	2	4
Stock Pots	26 quart size	1	2	2
Rolling Pin, ball bearing	18″ heavy duty	1	2	3
Scale	Portion	1	1	2
Scoops**	Size: #40, #30, #24, #16, #12, #8	2 each	4 each	4 each
Scoops	Aluminum; 1 quart; 2 quart	2 each	3 each	4 each
Scraper	Long handle, rubber;	3	5	10
	Bowl scraper, hard rubber	1	1	2
Shears	Poultry; 9½″	1	1	1
Sieve	Wire mesh; 9″	2	3	4
Spoons**	Measuring set;	2	4	6
	Composition handle, solid—13″	2	5	8
	Composition handle, perforated—13″	2	5	8
Utility Trays	Fiberglass—12″ × 16″	3	6	6
Whip, wire	Flexible wire—14″	2	4	6
	Rigid—16″	1	2	3
	Rigid—24″			1
Thermometer	Oven	1	1	1
	Roast	1	2	2
	Refrigerator	1	1	1
	Freezer	1	1	1
Timer, Interval	Minute minder; 1–60 minutes	1 each	1 each	1 each
Dish Pans	Aluminum or stainless steel	1-30 qt.	2-30 qt.	2-40 qt.
DINING AREA				
Tables, Formica or other composition tops	Folding; 30″ wide, 6′ long;	10-11	25-28	35-42
	Square or round table to seat 4 people. Number of tables depends upon size of room, number of lunch periods, number to be seated at one time	15-18	35-41	53-69
Chairs	Stacking; fiberglass, it is practical to plan on using each chair at least 3 to 3½ times	70	165	275
SERVING AREA				
Serving Counters, engineered to each individual installation	On each line have space for flatware, napkins, straws; 24″ space for stack of trays ahead of food; hot food openings—four to five 12″ × 20″ and one 18″ × 26″; solid counter following openings for salads and desserts—30″-40″	1 line	2 lines	2 lines up to 750; 3 lines up to 1,000 4 lines over 1,000
Milk Service	May be an integral part of counter or separate unit available to each line			

* Number needed depends upon number that can be put into steamer at one time.

** Also serving equipment

BASIC REQUIREMENTS FOR EQUIPPING TYPICAL SCHOOL FOOD SERVICE PROGRAMS (Chart No. 1 continued)

Needs vary according to size of program, participation, type of menu, food service facility, and arrangement of equipment.

ITEM	DESCRIPTION	NUMBER OF MEALS SERVED		
		200	500	750 & up
Milk Cooler for individual 8 ounce containers	1 cu. ft. net capacity for 50 to 75 one-half pints of milk, depending upon size and shape of containers; maintain temperatures of 32° F. to 45° F.			
Trays	Fiberglass; compartment 12″ × 14″	11 doz.	30 doz.	45 doz.
Soup Bowls	Optional	11 doz.	30 doz.	45 doz.
Flatware	Stainless steel;			
	Forks	11 doz.	30 doz.	45 doz
	Knives	11 doz.	30 doz.	45 doz.
	Teaspoons	11 doz.	30 doz.	45 doz.
Serving Implements:				
Fork*	10″	Varies with menu		
Ladles	Stainless steel; size:			
	2 oz.	1	2	2
	4 oz.	1	2	2
	6 oz.	1	2	2
	8 oz.	1	2	2
Scoops—ice cream disher*	Size and number varies with menu			
Spoons*	Serving, solid—13″	Varies with menu		
	Serving, perforated—13″	Varies with menu		
Tongs	Utility, stainless steel; allow 2 per line	2	4	4-8
Turner*	Utility	Varies with menu		
Dispensers	Napkin (one for each line); flatware (6 cylinder per line); Straw (one for each line).			
Salt and Pepper Shakers	Optional			
DISHWASHING AREA				
Dish Tables, engineered for each installation	Stainless steel; allow at least 8′ for clean and soiled dishes; 6′ for tables			
Pre-rinse Sink and Spray Unit	An integral part of soiled dish table	1	1	1 (pre-rinse scraper may be used)
Dishwashing Machine	Single tank	1	1	
	Conveyor type			1
Dishwashing Racks	Plastic	2	4-6	6-8
	Flatware	1	2-3	3-4
Food Waste Disposer	Listed under Mechanical Equipment			
Brushes	White bristle	6	10	12
	Scrub, short handle	1	2	3
	Garbage, long handle	1	1	2
	Kettle, long handle			1
Garbage Can on rollers (can also be used for ingredients in storeroom)	30 gallon; heavy duty, polyethylene for milk cartons and garbage	2	4	8
Mop Bucket	On rollers with wringer attachment	1	2	3-4
Mops		2	4	4
Brooms		2	4	4
Stepladders	Metal, folding	1	1	1

* Items listed under kitchen equipment used both in preparation and serving

BASIC REQUIREMENTS FOR EQUIPPING TYPICAL SCHOOL FOOD SERVICE PROGRAMS (Chart No. 1 continued)

ITEM	DESCRIPTION	NUMBER OF MEALS SERVED		
		200	500	750 & up
AUXILIARY EQUIPMENT				
Window Water Coolers				
Telephone				
First Aid Kit		1	2	3
Fire Blanket		1	1	2
Fire Extinguisher				1
Chair and Desk				
File Cabinet				
Bulletin Board				
Lockers				
Restroom				
Electric Fans on rollers		2	3	4
Electric Fly Traps		1	1	1-2

XVI. PLANNING AN EFFICIENT SCHOOL FOOD SERVICE FACILITY

A. Must include all aspects of the operation to avoid costly mistakes.

1. The facility.
2. Operation of the facility.
3. Maintenance.
4. Energy conservation.

B. General instructions.

1. Detailed instructions on use and care should accompany each piece of equipment.
2. Request information from supplier or manufacturer so that a file can be kept on each piece.
3. Keep records on the purchase and repairs on an equipment card.
4. Keep a record of the name, model, and serial number for each piece of equipment.
5. Teach workers to report immediately when equipment is not working properly.
6. Check plugs, switch boxes, etc. before calling a reliable repairman.
7. Strive for trained workers; systematic care is important.
8. Specific equipment instructions should be posted.
9. Schedule run times for range tops, grills, broilers, steam tables, fryers, ovens, and other equipment. Equipment should be turned on at a specific time, to a specific temperature, and turned off at the designated time based on rush and slow periods of activity. Equipment left on when not in use is costly.
10. It is normally not necessary to preheat steamtables, grills, and broilers. If preheating is required, preheat only as long as necessary depending on the appliance and desired temperature.
11. Keep equipment clean! Carbon and grease build-up make cooking equipment work harder and use more energy.
12. Turn off any equipment not in use. This is a general principle of energy conservation and applies not only to food preparation and sanitation equipment, but to lights, heating, ventilating, air-conditioning, and miscellaneous energy users.
13. Stagger turn-on times for heavy-duty electrical equipment. This will decrease electricity demand. Many utilities record the peak demand load at 30 minute intervals. Avoid turning on all electrical equipment upon arrival in the morning. Develop a schedule to stagger turn-on times and lower the peak demand in each 30 minute period.
14. Some items may be cooked in the ovens or steamers rather than range tops. Range tops, griddles, and broilers are the biggest energy wasters in the kitchen. Concentrate efforts on reducing their use and using them efficiently. Ovens, steamers, and fryers are the most energy efficient.

C. Energy conservation operating techniques for equipment in school food service programs.

1. Range top operation.
    a. Avoid using the range top. If possible do not use the range-top at all. Other equipment such as the steamer, ovens, and tilting braising pan are capable of replacing the range top.
    b. Use the right size pot. Never use a pot smaller than the burner. Electric burners or heating elements should be at least one inch less in diameter than the pot. On the other hand, oversized pots waste energy by exposing more metal surface to heat loss.
    c. Cluster pots close together, placing pots as close as possible on the range top.
    d. Cover all pots and simmer rather than boil. Covering pots reduces heat loss and the food will cook faster. It has been estimated that covered pots require only 25% of the energy of uncovered pots.
    e. Turn heat off early. Residual heat in the burner and pot will continue to cook the food.
2. Griddle operation.
    a. Preheat griddle approximately six minutes only. Six minutes is sufficient preheating time for a 350° F. temperature.
    b. Heat only a portion of the griddle. If the griddle can be heated in sections, heat only the sections needed. Cluster food close together on the griddle to minimize heat loss.
    c. Cover griddle products. Covers over griddled products will reduce cooking times and some items will only have to be cooked on one side. Covers on standby griddles will slow heat loss and conserve energy.
    d. Use griddle weights. Placing weight on bacon and sausage or other griddled products will shorten cooking time but may alter appearance.
    e. Turn off griddle when product is finished.
3. Broiler operation.
    a. Preheat broilers approximately six to eight minutes. This is all that is necessary.
    b. Use lowest temperature. Many broilers can reach 825° F. and this is not necessary for most foods.
    c. Turn off the broiler immediately when finished.
4. Oven operation.
    a. Keep oven doors closed. Every second the oven door is open the temperature drops three to ten degrees. Load and unload products as quickly as possible. Avoid opening the door to check on the product.
    b. Do not use two ovens when one will do. Bake products requiring the same temperature in one oven. Avoid using a large oven for small amounts of food. Schedule baking and roasting to utilize the oven fully and shorten daily operating time. Try cooking meat slowly at low temperatures. Even though it will take longer, less energy will be used and often a more tender product will result.
    c. Do not preheat unless necessary. Preheating is usually only suggested for bakery products.
    d. Do not set thermostat higher than needed. The oven will not heat up faster; it will simply overheat.
    e. Do not use aluminum foil. Wrapping potatoes or other products retards baking as the aluminum foil reflects the oven heat. If foil is necessary, wrap the potato after it is baked.
5. Fryer operation.
    a. Fry from 300° F. — 350° F. On older fryers the temperature may have to be set to 375° F.
    b. Idle fryers at 200° F.
    c. It is more efficient to melt the fat and bring it to proper temperature before adding the product to be fried.

d. Keep fat above coils or elements. If coils or elements are partially exposed, 25% of the heat entering the fryer may be wasted.
e. Cook food dry. Have foods as dry as possible when frying. An enormous amount of energy is needed to change the water droplets or ice on frozen products to steam.
f. Blanch or precook foods in steamer. Food such as potatoes, chicken, etc. can be partially cooked by steam and then immediately finished and browned in a fryer. This will save energy as a steamer is more efficient and uses less energy than a fryer.

6. Steam cooking.

a. Steam is the most efficient form of cooking because:

(1) It is a moderate cooking medium.
(2) It transfers heat rapidly.
(3) It requires little preheating.
(4) Cooking times are much shorter.

b. Begin cooking in a steamer. Partially cook product in a steamer and immediately finish it with usual cooking method.
c. Reheating is not necessary.
d. Cover steam-jacketed kettles.
e. Avoid clouds of steam. Clouds of steam indicate unnecessarily high temperatures and put a further load on ventilating and air-conditioning systems.
f. Steam tables are energy wasters. Even though steam is efficient, a steam table consumes more energy than any other piece of equipment. Use it **only** for keeping hot and **not for** cooking.

7. Dishwashing operations.

a. Pre-rinse dishes, pots, etc. in cold water; stack in dishmachine rack until enough are accumulated for a full load. Turn dishmachine off when not in use.
b. Keep dishwater temperature at the proper level. Standard temperatures are 140° F. for washwater and 180° F. for final rinse. Using hotter water wastes energy.
c. Turn heaters off when machine is not in use and at closing. It costs money to heat the water whether it is used or not.
d. Check power rinse. Make sure that the power rinse on dishwasher is turning off automatically when the tray has gone through the machine.
e. Clean dishwasher regularly. Check wash and rinse jets after each meal. Empty scrap trays frequently. Delime periodically. Lime build-up clogs the wash and rinse jets.
f. Turn off garbage disposals when not needed.
g. Use mop buckets to clean kitchen areas.

8. Maintenance.

a. Check all thermostats. Check thermostats with a thermometer and adjust them if necessary. Malfunctioning thermostats waste energy by heating to high temperatures and may result in an unsatisfactory food product.
b. Keep gas flames adjusted. Properly adjusted gas flames should be all blue with a firm center cone. A yellow-orange tip means that some gas is not being burned. Food deposits on the burners will also reduce efficiency. Have serviceman check gas pressure to assure that it is adequate for appliances.
c. Inspect pipes for leaks regularly. Hot water and steam leaks are both great energy wasters and indicators of potential danger. Escaping steam or over-heated gauges should receive immediate attention. Replace all valves or gaskets that show leakage. Dripping water faucets should have washers replaced immediately.
d. Turn off water heaters when closed. Install timers to turn water heaters down or off when the operation is closed and to turn back to the desired temperatures two hours prior to opening.

e. Drain water heaters regularly. Drain and flush the hot water supply every six months and more often if local water dictates. This prevents accumulation of minerals which reduce heater efficiency.

f. Adjust and clean fresh air vents, return air, and ventilation fans to the lowest possible comfort level which will meet local codes.

g. Check overheating ovens. Ovens which become excessively hot on the exterior surface have insufficient or deteriorated insulation and should be replaced. Check oven door gaskets for a tight fit.

XVII. INSPECTION AND/OR CHECKLIST FOR ENERGY CONSERVATION

Kitchen: ____________

Inspected by: ____________

	YES	NO	COMMENTS
1. Are ovens opened only to load and unload food items?			
2. Can meat thermometers be read without opening ovens?			
3. Are pots and pans on the range top grouped together?			
4. Are lids placed on pots and pans to reduce heat loss while cooking?			
5. Are products cooked at a simmer rather than a hard boil if the same results can be achieved?			
6. Are gas flames properly adjusted for peak efficiency?			
7. Is the gas pressure from the utility company maintained at proper level to ensure maximum equipment efficiency?			
8. If electric range tops are used, is cooking always done on a burner smaller than the cooking pot?			
9. If a product is to be served in aluminum foil, is it cooked first and then wrapped?			
10. Are automatic timers used to control cooking times?			
11. If the kitchen has various size ovens, are small ovens used to bake small batches?			
12. Can some items be cooked while an oven is being heated to a higher temperature to cook other products?			
13. Is there a schedule of preheating times for all preparation equipment?			
14. Is the preparation equipment being utilized properly?			
15. Is the preparation equipment turned on only one piece at a time? (If electric, stagger at 30 minute intervals if possible.)			
16. Are second pieces of preparation equipment used only during peak periods and turned off when not needed?			
17. Is preparation equipment clean and free of carbon and grease build-up?			

309

INSPECTION AND/OR CHECKLIST FOR ENERGY CONSERVATION (continued)

	YES	NO	COMMENTS
18. Are some food items being prepared during off peak periods to completely utilize equipment?			
19. Are proper cooking temperatures observed?			
20. Are equipment thermostats calibrated to ensure the correct desired temperature?			
21. Do all thermostats on preparation equipment work properly?			
22. Are the reach-in refrigerators and freezers clean and maintained at the proper temperature?			
23. Are there thermometers in each reach-in refrigerator and freezer?			
24. Are all the temperatures of the refrigerators and freezers set at the proper level?			
25. Are frozen foods thawed in the refrigerator before being cooked? Special recipes may require preparation while frozen.			
26. Is the ice maker machine lid closed when ice is not being removed?			
27. Is the dishmachine turned off when not being used?			
28. Are conveyor belts turned off during slow periods?			
29. Are sinks utilized to rinse flatware, china, and glassware to conserve running water?			
30. Is cold water used for pre-rinse?			
31. Are water valves, faucets, and gauges properly maintained to prevent leaks?			
32. Do the drains in sinks seal properly to prevent draining?			
33. Are there accurate thermometers on the dishwashers?			
34. When in operation do dishmachines register: 140° F.—Wash water 180° F.—Final rinse			
35. Are all dishwashing trays full when placed in machine?			
36. Does the final rinse on the dishmachine shut off completely if not in use?			
37. Are booster water heaters turned off when the dishmachine is not in use?			
38. Do all hot water and steam pipes have proper insulation?			
39. Is there adequate water pressure from pumps to ensure clean dishes?			
40. Is the garbage grinder turned off when not needed?			

Index

A

- Abbreviations 87, 89
- Adjusting recipes
  - Charts 74–78
  - Fractional parts of common measures 73
  - How to use charts 70–72

B

- Baking 81, 96, 106–113, 274
- Bids
  - Formal 126, 127
  - Informal 135
- Boiling 81
- Braising 81, 97, 98
- Bread/bread alternate
  - Charts 31, 56, 57
  - Group 10–13
  - Meal Pattern Requirements
    - Breakfast 55, 57
    - Lunch 22, 24
  - Nutrients 10, 11, 13, 57, 58
  - Quick 106, 108, 110
  - Yeast 106–108
- Breakfast
  - Choice menus 36
  - Cycle menus 59, 60
  - Importance 53, 54
  - Menu evaluation 58
  - Menu checklist 61
  - Nutrients 57, 58
  - Program 54, 55
  - Recommendation 55, 57
  - Requirements 55
  - Survey forms
    - Parent 62
    - Student 63
- Budgeting
  - Budget 121
  - Classification of expenditures 194
  - Controls to consider 194
  - Definition 193
  - Estimating lunch income sample form 195
  - Importance 193
  - Operating reserve 194
  - Planning 193

C

- Cafeteria planning (See Kitchen planning)
- Cakes and cookies 110, 111
- Calcium
  - Functions 6, 7, 13
  - Sources 7, 10, 13, 57
- Can cutting 133, 134
- Can sizes and substitutions 87
- Carbohydrates
  - Functions 4, 13
  - Sources 4, 13
- Cheese
  - Alternates 24, 79, 159
  - Storage, care and preparation 100, 275
- Choice menus
  - Coordination 38
  - Variations 36–38, 114
- Classification of foods—chart 30, 31
- Cleaning schedule (See Management work schedules)
- Commodity foods (See USDA Donated Foods)
- Common measures (See Measures)
- Composition of foods 4–7
- Convenience foods 159, 160
- Cost
  - Controlling 199
  - Food cost comparisons
    - Can cutting 133, 134
    - Convenience foods 159, 160
    - Informal quotations 135
    - USDA Donated Foods 199
  - Menu pre-costing (recipe) 199–205
  - Menu post-costing (invoice) 41, 199, 200, 201, 206
- Cycle menus
  - Advantages 34, 35
  - Choice 36, 45–49
  - Definition 34
  - Evaluation 38–40, 50
  - Forms
    - Six weeks 42
    - Two choices 45, 46
    - Three choices 47–49
  - Frequency of items used 43, 44
  - Scheduling 35
  - Variations 36–38

D

- Dietary guidelines 8–11, 28, 29, 32, 33
- Dipper measurements 87
- Dishmachine
  - Equipment 294–296, 311, 314
  - Procedures 228–231, 314, 317
- Dish return (See Tray return)
- Deep fat frying 96, 97, 313, 314
- Dehydrated fruit 105
- Dehydrated vegetables
  - Preparation 103, 104
  - Substitution equivalents 85
- Depreciation of non-expendable equipment
  - Computing 186
  - Estimating acquisition cost 187
  - Form 188–190
  - Monthly depreciation factors 188, 189
  - New, rebuilt or used equipment 187, 188
- Donated food (See USDA Donated F[illegible]
- Dried Eggs 85, 86
- Dry heat 96
- Dry milk 29, 32, 83, 85, 100, 131 [illegible], 129, 279
- Dry yeast 84, 107

E

- Education
  - Nutrition Education 14, 15
  - Nutrition Education and Training Program 14, 15
- Eggs
  - Bids 130, 131
  - Dried 85, 86
  - Preparation 275
  - Sanitation 226
  - USDA size and weight classes 128
- Energy conservation
  - Check list 316, 317
  - Equipment 284, 285, 313–315
- Energy Foods
  - Carbohydrates 4
  - Fats 4, 5
- Equipment
  - Basic Requirement 281–285, 306–312
  - Depreciation (See Depreciation of non-expendable equipment)
  - Employee training 285, 286
  - Energy conservation 284, 285, 287–291, 294, 296, 297, 313–317
  - Facility planning (See Kitchen planning)
  - Installation 285
  - Inventory 184, 185, 285
  - Large Equipment
    - Compartment steamer 288, 289, 307, 314
    - Convection ovens 287, 288, 307, 313, 316
    - Convection steamers 289, 290
    - Dishmachines 294–296, 311, 314, 317
    - Food holding cabinets 301, 308, 309
    - Food mixers 292, 293, 307
    - Freezers 282, 297, 308, 317
    - Milk coolers 302, 310, 311
    - Ranges 286, 287, 307, 313, 316
    - Refrigerators 282, 296–298, 308, 317
    - Serving counters 301, 302, 310, 314
    - Sneeze guards 38, 302
    - Steam jacketed kettles 290, 291, 307, 314
    - Tilting braising pans 291, 307
    - Vertical cutter mixers 293, 294, 307
  - Maintenance 219, 220, 282, 286, 312, 314, 315
  - Mobile 298–301, 309
  - Records 184, 185, 285
  - Sanitation 228–232
  - Scheduling 270
  - Small equipment
    - Bun and coney slicer 303
    - Can openers 303, 304
    - Knives 242, 273, 304, 305, 309
    - Scales 305–307, 309
- Equivalent measures 85, 87
- Evaluation of personnel (See Management personnel)

F

- Facility planning (See Kitchen planning)
- Fats
  - Functions 4, 5, 13, 107, 112
  - Group 11, 12
  - Reduction 11, 28, 29, 32, 33
  - Sources 4, 5, 11–13, 33
- First aid 243, 244
- Fish 24, 30, 100, 226
- Food
  - Classification 30, 31
  - Composition 3–7
  - Convenience 159, 160
  - Daily needs 9–12
  - Enrichment 163
  - Fortification 10, 11, 79, 163
  - Groups 9–13
  - Habits 3, 14, 15
  - Needs assessment 15
  - Poisoning 234–238
  - Preference survey 18, 63
  - Preparation
    - Methods 81, 82, 96–113
    - Purchasing 121–124
    - Short cuts 272–276
    - Steps 95, 96
    - Terms and abbreviations 81, 82
    - USDA Donated Foods (See USDA Donated Foods)
- Fortification (See Food fortification)
- Fractional parts of common measures (See Measures)
- Fruit
  - Classification 30
  - Frozen 105
  - Grades 128, 129
  - Group 10, 12, 13
  - Meal Pattern Requirements
    - Breakfast 55, 58
    - Lunch 22, 24
  - Nutrients 10, 12, 13, 30, 58
  - Preparation 105, 275
  - Storage (See Storage)
  - Weights and measures 82
- Freezer (See Equipment)

G

- Garnish 81, 116, 117
- Glossary of terms 163, 164

I

- Inventory
  - Definition 177
  - Equipment 184, 185, 285
  - Management 177, 121
  - Perpetual 163, 177–181
  - Physical 177–179, 182, 183
- Invoices 127
- Iron
  - Function 7
  - Sources 7, 13, 31, 58

J

- Job analysis 249, 250, 271
- Job description 249, 261

K

- Kitchen Planning
  - Aisle space 211, 283, 299
  - Equipment needs 284, 306–312
  - Energy conservation 284, 285, 313–317
  - General construction features 280
  - Installation of large equipment 285
  - Mistakes frequently made 283, 284
  - Planning efficient facility 312–215
  - Space allocation 282, 283
  - Steps in planning 279
  - Tray return 114, 283
  - Types of kitchens 279, 280
  - Work area layouts 280–282
- Knives 242, 273, 304, 305, 309

L

- Labeling 157, 158
- Labor management 194, 255–260
- Ladle measurements 87
- Left-over food 35, 41, 226, 227
- Lunch (See Meal Pattern Requirements)

M

- Macaroni products 24, 56, 79
- Management
  - Developing standards 250
  - Duties and responsibilities 251–253, 257–259
  - Equipment 184, 185, 270, 285
  - Functions 249, 250
  - Inventory (See Inventory)
  - Job analysis 249, 250, 271
  - Labor 255–258
  - Personnel
    - Evaluation 253–255
    - Job description 261
    - Responsibilities 257–259
    - Student employees 258
    - Training 223, 225, 234, 257–260, 286
  - Policies 250, 251
  - Principles of motion economy 271, 272
  - Purchasing (See Purchasing)
  - Safety (See Safety)
  - Sanitation (See Sanitation)
  - Storage (See Storage)
  - Supervision 252, 253
  - Time and work short cuts 272–276
  - Work schedules 260–269
  - Work simplification 270, 271
- Meal Pattern Requirements 21–24, 30, 31, 55
- Meal per labor hour 256
- Meal service 113–115, 118
- Measurements
  - Abbreviations 87, 89
  - Dipper 87
  - Dry 95, 309
  - Equivalent 85, 87
  - Fractional parts 73
  - Ladle 87
  - Liquid 88, 90, 95, 309
  - Metric 88–91
  - Pan capacity 88
  - Weights and approximate measures 83, 84
- Meat/meat alternate
  - Breakfast recommendations 55, 58
  - Classification 30
  - Group 9, 12, 13
  - Meal Pattern Requirements 22, 24, 26
  - Nutrients 9, 13, 58
  - Preparation 96–98, 275
  - Product standards 146–151
  - Storage, care and preparation 98–100
  - USDA grades 128, 129
- Menu planning
  - Age/grade groups 23, 24
  - Breakfast 36, 53–62
  - Classification of foods 30, 31
  - Choice 36–38, 114
  - Common errors 40, 41
  - Costing 199–206
  - Cycle 34–49, 122
  - Documentation 41
  - Evaluation 38–40, 50
  - Goals 21
  - Guidelines 27, 28
  - Meal Pattern Requirements 21–24, 30, 31, 55
  - Offer vs Serve 22, 23, 26
  - Organization
    - Steps 26, 27
    - System 23, 25, 26
  - Recommendations 21, 22, 28, 55
  - Reduction of sugar, fat, and salt 28, 29, 32, 33
  - USDA Donated Foods 28
- Merchandizing 114–118
- Metric system 88–91
- Milk
  - Bids 131–133
  - Classification 31
  - Cooler 61, 302, 310, 311
  - Fluid 21 24, 26, 29, 32, 55, 57, 58, 107, 131–133, 276
  - Group 9, 10, 12, 13
  - Meal Pattern Requirement
    - Breakfast 55, 57
    - Lunch 21, 24, 31
  - Non-fat, dry 29, 32, 83, 85, 100, 101, 107, 129, 276
  - Nutrients 9, 10, 13, 57, 58
- Minerals
  - Calcium 6, 7, 10, 13
  - Iron 7, 13, 21, 22, 28, 31, 58
  - Other 7
- Mobile equipment 296–302
- Moist heat 97, 98

N

- National School Lunch Week 16, 40
- New Employees 259, 260
- Nutrients
  - Classification 4–7
  - Definition 3
  - Function 4, 7, 13
  - Preservation 7, 8
  - Source 13
- Nutrition
  - Basic concepts 3
  - Definition 3
  - Dietary guidelines 8–11, 28, 29, 32, 33
  - Education
    - Five food groups 9–12, 13, 17
    - Guides to good nutrition 8, 11, 28, 29, 32, 33
  - Needs assessment 14, 15
  - Nutrition Education Training Program (NET) 14, 15
  - Oklahoma Menu Planning Book 41, 57
  - Schools 14, 15
  - Student-parent involvement 15–17, 23, 35
  - Survey 18, 62, 63

O

- Offer vs serve 22, 23, 26
- Oklahoma Menu Planning Book 41, 57
- Order forms 136–144
- Organization
  - Basic plan 249
  - Chart 249
  - Function 249, 250
  - Management responsibilities (See Management)
  - Policies 250, 251
- Ovenizing 96, 113, 116
- Oven temperatures 69, 87, 91

P

- Packaging guidelines for frozen foods 218
- Pan capacity 88
- Par-boil 82
- Parent Involvement (See Student-Parent Involvement)
- Pastry 112, 113
- Participation 35
- Personnel (See Management personnel)
- Perpetual inventory 163, 177–181
- Physical inventory 177–179, 182, 183
- Plate waste 22, 35, 39–41, 55, 95
- Poultry 99, 100, 129, 146, 152, 153, 226
- Product analysis 155, 156
- Protein
  - Functions 4, 13, 57, 58
  - Sources 4, 13, 57, 58
- Purchasing
  - Bids 125–127, 130–133, 135, 163
  - Buying Practices
    - Check list 162
    - Comparing prices 133–135, 159, 160
    - Considerations 121–124, 133, 159–160
    - Controlling cost 122, 160, 161, 199–206
    - Can cutting 133, 134
    - Consumer reference list 147–154
    - Definition 121
    - Food standards 145–154
    - Glossary of terms 163, 164
    - Invoices 127
    - Labeling 157, 158
    - Ordering 136–144
    - Procurement standards 124–126
    - Product analysis 155, 156
    - Receiving and inspecting 127, 145, 162
    - Reimbursable meal (See Meal Pattern Requirement)
    - Responsibility
      - Management 123, 160, 161
      - Manufacture 145, 157
      - Vendor 145
    - Sanitation 223
    - Specification 127–133, 164

Q

- Quantity food preparation (See Food preparation)
- Quick bread 108, 110

R

- Recipes, standardized quantity
  - Adjusting 70–78
  - Causes of failure 97, 108, 109, 111, 112
  - Definition 67, 68
  - Evaluation 69
  - Fractional parts of common measures 73
  - Procedure for using 68, 69
  - Recipe file 70
  - Reduction of sugar, fat and salt 29–32
  - Reference charts 73–88
- Recommended dietary allowances 8, 9
- Records 41, 57, 178, 179, 182–185, 190, 206, 285
- Refrigerators (See Equipment)
- Roasting 96

S

- Safety
  - First aid 243, 244
  - Procedure and practices 242
  - Requirements 242
  - School food service 242
- Salad
  - Bar 36–38, 302
  - Preparation 104
- Salt 11, 28, 29, 32, 33, 103, 107, 112
- Sanitation
  - Cleaning schedules 267–269
  - Definition 223
  - Dishwashing 228–231, 314, 317
  - Equipment 227, 228, 231, 232
  - Facilities 220, 227
  - Food handler recommendation 224
  - Food hazards 226
  - Food poisoning 234–238
  - Food storage
    - Cooling 216, 217, 227
    - Housekeeping 219
    - Sanitary practices 225
    - Temperatures (See Temperatures)
  - Garbage and trash, care and disposal of 232, 282, 311
  - Handwashing 234
  - Health Department check list 239, 240
  - Left over food 35, 41, 226, 227
  - Pest Control 218, 232, 233
  - Prevention and procedures for food borne illness 238, 241, 242
  - Recommendation
    - Appropriate dress 234
    - Kitchen traffic 224
    - Storage, preparation and service 225–227

  - Refrigerators 231
  - Responsibilities
    - Manager 233, 234, 237, 238, 241, 242
    - Food service employee 223, 225, 234
  - Sanitizing
    - Chemicals 228, 230, 296
    - Temperatures 225, 226, 228–230, 314, 317
  - Sneeze guard 38, 302
  - Thawing 98–100, 217, 226, 296
  - Transmission of disease 237
  - Tray samples 113, 241
  - Work habits 225
- Saute 82
- Scald 82
- Serving school meals 113–115, 118
- Simmering 82, 98
- Sneeze guard 38, 302
- Standards of foods (See Purchasing)
- Standards of management (See Management)
- Standardized quantity recipes (See Recipes)
- Steam cookery 82, 105, 106, 312, 314
- Stewing 82, 98
- Storage
  - Arrangement of food 210, 211
  - Dry storage 214, 215, 219, 282, 307
  - Facility 209
  - Frozen 217, 219, 282, 297, 308
  - Fruit and vegetable 210, 212, 213
  - Housekeeping practice 219
  - Location 210, 214, 215, 297
  - Management 218, 219
  - Odors 213
  - Problems to avoid 214
  - Refrigerated 215–217, 219, 220, 282, 296, 297, 308
  - Space allocation 214, 216, 282, 307, 308
  - Summer 220
  - Temperature recommendations 209, 212–214, 216, 217, 227, 308
  - USDA Donated Food 170, 209
  - Ventilation 210, 214, 215, 280, 312, 315
- Student employees 258
- Student parent involvement 15–18, 23, 35, 62, 63
- Substitution, approximate equivalents 85
- Sugar 11, 13, 28, 29, 32, 33, 107

T

- Temperatures
  - Dishwashing 228–230, 296, 314, 317
  - Guidelines for food service 90, 229
  - Oven 69, 87, 91
  - Storage
    - Dry 209, 212–214
    - Frozen 209, 212, 213, 217, 308
    - Refrigerator 209, 212, 213, 216, 308
  - Serving foods 225, 226, 308
- Terms and abbreviations 81, 82
- Textured vegetable protein (TVP) 24, 79–81, 155, 156
- Thawing 98–100, 217, 226, 297
- Time and motion 270–276
- Training employees (See Management)
- Tray return 114, 283
- Type A Meal Pattern (See Meal Pattern Requirements)

U

- USDA Donated Foods
  - Application and agreements 168, 172, 173
  - Contract (See Application and agreement)
  - Commodity only schools 168
  - Disaster feeding 171
  - Distribution 168, 170
  - Inventories 170, 174, 179
  - Instructions 167–169
  - Office address and telephone number 171
  - Program explanation 167
  - Storage requirements 170, 209, 210
  - Utilization 193
  - Value 179, 199

V

- Vegetables
  - Classification 30
  - Dehydrated 85, 103, 104
  - Frozen 103
  - Grades 128, 129
  - Group 10, 12, 13
  - Meal Pattern Requirements
    - Breakfast 55, 58
    - Lunch 22, 24, 26
  - Nutrients 10, 13, 58
  - Preparation
    - General 101–104
    - Short Cuts 276
  - Storage (See Storage)
- Vendor responsibility 145
- Vitamins
  - Functions and sources 5, 6, 13
  - Vitamin A 5, 9–11, 13, 30, 58
  - Vitamin B^1 (Thiamine) 6, 13, 58
  - Vitamin B^2 (Riboflavin) 6, 13, 58
  - Vitamin B^3 (Niacin) 6, 13, 58
  - Vitamin C (Ascorbic Acid) 6, 10, 11, 13, 30, 58
  - Vitamin D (Sunshine) 5, 10, 11, 13, 58
  - Vitamins—Others 6, 9–11

W

- Water 7
- Water heater 314, 315
- Weights and approximate measure table 83, 84
- Weights, fresh fruits and vegetables 82
- Work schedules
  - Cleaning 267–269
  - Equipment 270
  - Personnel 263–266
  - Types 260–262
- Work simplification 270, 271

Y

- Yeast, dry and compressed 84, 107
- Youth Advisory Council (YAC) (See Student Parent Involvement)
- Yeast bread 106–108